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Canada Geological Survey

GEOLOGICAL SURVEY OF CANADA
ROBERT BELL, M.D., Sc.D. (CANTAB.), LL.D., F.R.S.

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MINERAL RESOURCES OF CANADA

[No. 2]

[Bulletin on]

COAL

Reprint of Article in Annual Report of the Section of Mines for 1902,
Part S, Vol. XV.



OTTAWA

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GEOLOGICAL SURVEY OF CANADA,
OTTAWA, January 9, 1904.

To Dr. ROBERT BELL, L.L.D., F.R.S., &c.,
Acting Director.

SIR:—The following pamphlet dealing with the coal industry and coal-fields of Canada is reprinted from the Annual Report of the Mines Section for 1902, constituting Part S. Vol. XV, N.S., of the Annual Report of the Geological Survey Department.

Pursuant to a policy suggested some years ago and now carried out with your permission, this report is one of a series of similar bulletins intended to give in condensed and popular form, information regarding the mineral resources and possibilities of the country, together with any data regarding similar occurrences in other countries where such would seem to be of use to prospectors and operators in Canada.

I am, sir,
Your obedient servant,

ELFRIC DREW INGALL,
Mining Engineer in Charge.

MINES SECTION.

EXPLANATORY NOTE.

A number of special articles relating to the mineral industries and resources of Canada have appeared from time to time in the various reports of the Mines Section issued annually since 1897.

In these the aim has not been to write up the subject dealt with in great detail, but more particularly to meet the demand for precise descriptions serving to give the general public clear ideas of the important and salient features of given industries and mineral districts, together with references to the literature of the subject, so that anyone so desiring could pursue the subject in greater detail.

THE COAL MINING INDUSTRY OF CANADA.

The principal coal-bearing areas at present worked in Canada are the Nova Scotia coal-fields in rocks of Carboniferous age, the Cretaceous coals of Vancouver island and the more recently opened fields of the Crows Nest Pass B.C., also found in the Cretaceous rocks.* In Alberta, mining is being done in several different areas, Canmore, Lethbridge and Frank being the chief centres of activity. Small quantities of coal, likewise of Cretaceous age, are mined in the vicinity of Edmonton. Lignite of good quality is mined in the Souris river district, Assiniboia, and during the past two years small amounts have been mined in the Yukon district.

The total production of coal in 1902 was 7,193,142 tons (of 2,000 lbs.) valued at \$14,478,181, constituted as follows:—

| | Tons. |
|------------------------------|-----------|
| Bituminous and lignite | 7,176,592 |
| Anthracite..... | 16,550 |

The anthracite coal was mined in the Cascade Coal Basin, Alberta, the mine being situated at Anthracite on the main line of the Canadian Pacific Railway.

Compared with the previous year, the production of coal in Canada in 1902 shows an increase of 965,790 tons or over 15 per cent in quantity and \$2,472,616 or over 20 per cent in value.

The output is the largest that has yet been attained in Canada and is over twice the production of seven years ago.

Statistics of production are given in Tables 1, 2 and 3, following:—

TABLE 1.

COAL.

Production.

PRODUCTION BY PROVINCES, 1900, 1901 and 1902.

| Province. | 1900. | | 1901. | | 1902. | |
|----------------------------------------------|-----------|--------------|-----------|--------------|-----------|--------------|
| | Tons. | Value. | Tons. | Value. | Tons. | Value. |
| Nova Scotia..... | 3,623,536 | \$ 8,088,250 | 4,158,068 | \$ 6,496,982 | 5,161,316 | \$ 9,216,636 |
| British Columbia | 1,623,180 | 4,347,804 | 1,660,515 | 4,447,809 | 1,534,902 | 4,111,344 |
| North-west Territories including Yukon | 351,950 | 839,375 | 391,139 | 1,008,917 | 478,129 | 1,110,521 |
| New Brunswick. | 10,000 | 15,000 | 17,630 | 51,857 | 18,795 | 39,680 |
| Total | 5,608,666 | 13,290,429 | 6,227,352 | 12,005,565 | 7,193,142 | 14,478,181 |

* A commencement has been made in coal mining in the Nicola district, B.C.

COAL.

Production.

TABLE 2.

COAL.

PRODUCTION. COMPARISON OF 1901 AND 1902.

| Province. | INCREASE OR DECREASE. | | | |
|--------------------------------------------------|-----------------------|----------------|--------------------|----------------|
| | Tons. | Per cent. | Value. \$ | Per cent. |
| Nova Scotia | <i>i</i> 1,003,248 | <i>i</i> 24·13 | <i>i</i> 2,719,654 | <i>i</i> 41·86 |
| British Columbia.... | <i>d</i> 125,613 | <i>d</i> 7·56 | <i>d</i> 336,465 | <i>d</i> 7·56 |
| North-west Territories includ- ing Yukon..... | <i>i</i> 86,990 | <i>i</i> 22·24 | <i>i</i> 101,604 | <i>i</i> 10·07 |
| New Brunswick..... | <i>i</i> 1,165 | <i>i</i> 6·61 | <i>d</i> 12,177 | <i>d</i> 23·49 |
| Dominion..... | <i>i</i> 965,790 | <i>i</i> 15·51 | <i>i</i> 2,472,616 | <i>i</i> 20·59 |

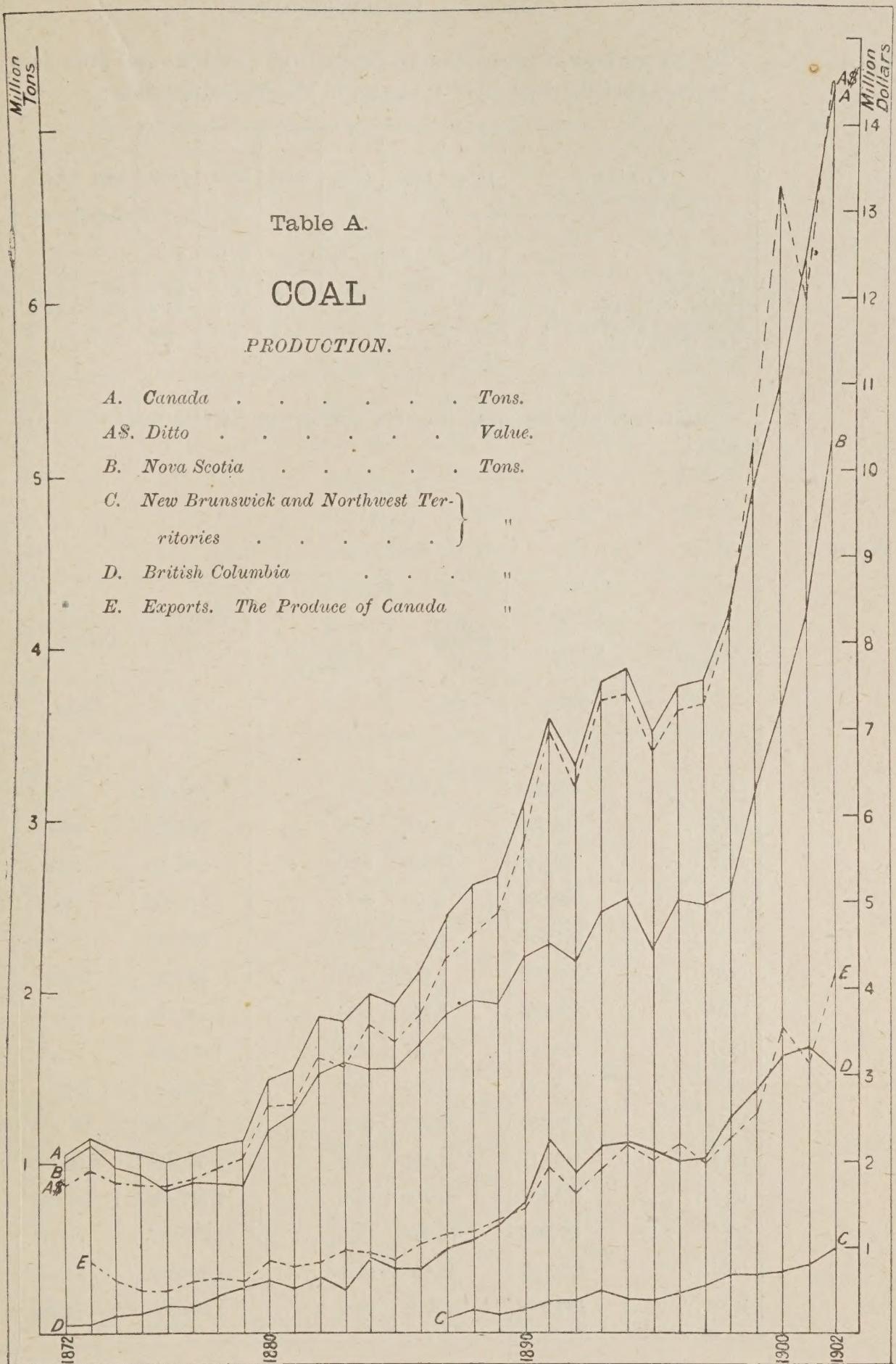
i Increase. *d* Decrease.

TABLE 3.

COAL.

ANNUAL PRODUCTION SHOWING THE INCREASE OR DECREASE EACH YEAR

| Calendar Year. | Tons. | Value. | Average Value per Ton. | Increase (<i>i</i>) or Decrease (<i>d</i>) in Tonnage. | Incr. (<i>i</i>) or Decr. (<i>d</i>) per cent. |
|-------------------|-----------|-------------|------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------|
| 1886..... | 2,116,653 | \$3,739,840 | \$1 77 | ..... | ..... |
| 1887..... | 2,429,330 | 4,388,206 | 1 81 | <i>i</i> 312,677 | <i>i</i> 14·8 |
| 1888..... | 2,602,552 | 4,674,140 | 1 80 | <i>i</i> 173,222 | <i>i</i> 7·1 |
| 1889..... | 2,658,303 | 4,894,287 | 1 84 | <i>i</i> 55,751 | <i>i</i> 2·1 |
| 1890..... | 3,084,682 | 5,676,247 | 1 84 | <i>i</i> 426,379 | <i>i</i> 16·0 |
| 1891..... | 3,577,749 | 7,019,425 | 1 96 | <i>i</i> 493,067 | <i>i</i> 16·0 |
| 1892..... | 3,287,745 | 6,363,757 | 1 94 | <i>d</i> 290,004 | <i>d</i> 8·1 |
| 1893..... | 3,783,499 | 7,359,080 | 1 95 | <i>i</i> 495,754 | <i>i</i> 15·1 |
| 1894..... | 3,847,070 | 7,429,468 | 1 93 | <i>i</i> 63,571 | <i>i</i> 1·7 |
| 1895..... | 3,478,344 | 6,739,153 | 1 94 | <i>d</i> 368,726 | <i>d</i> 9·6 |
| 1896..... | 3,745,716 | 7,226,462 | 1 93 | <i>i</i> 267,372 | <i>i</i> 7·7 |
| 1897..... | 3,786,107 | 7,303,597 | 1 93 | <i>i</i> 40,391 | <i>i</i> 1·1 |
| 1898..... | 4,172,582 | 8,222,878 | 1 97 | <i>i</i> 386,475 | <i>i</i> 10·2 |
| 1899..... | 4,925,051 | 10,283,497 | 2 09 | <i>i</i> 752,469 | <i>i</i> 18·0 |
| 1900..... | 5,608,666 | 13,290,429 | 2 37 | <i>i</i> 683,615 | <i>i</i> 13·9 |
| 1901..... | 6,227,352 | 12,005,565 | 1 93 | <i>i</i> 618,686 | <i>i</i> 11·04 |
| 1902..... | 7,193,142 | 14,478,181 | 2 01 | <i>i</i> 965,790 | <i>i</i> 15·51 |



COAL.

The percentage of production to be credited to the several provinces at various periods since 1874 is shown in the following table:—

| Province. | 1874. | 1880. | 1890. | 1898. | 1899. | 1900. | 1901. | 1902. |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. |
| Nova Scotia..... | 91 | 79 | 71 | 61·4 | 63·9 | 64·6 | 66·8 | 71·8 |
| British Columbia..... | 8 | 20 | 25 | 30·3 | 29·0 | 28·9 | 25·7 | 21·3 |
| Northwest Territories } .. | | | 4 | 8·3 | 7·1 | 6·5 | 6·5 | 6·9 |
| New Brunswick. | | | | | | | | |

Statistics of exports and imports are given in the following five tables:

TABLE 4.

COAL.

Exports.

EXPORTS.

| CALENDAR YEAR. | PRODUCE OF CANADA. | NOT PRODUCE. | CALENDAR YEAR. | PRODUCE OF CANADA. | NOT PRODUCE. |
|-------------------|--------------------------|-----------------|-------------------|--------------------------|-----------------|
| | Tons. | | | Tons. | |
| 1873..... | 420,683 | 5,403 | 1888..... | 588,627 | 84,316 |
| 1874..... | 310,988 | 12,859 | 1889..... | 665,315 | 89,294 |
| 1875..... | 250,348 | 14,026 | 1890..... | 724,486 | 82,534 |
| 1876..... | 248,638 | 4,995 | 1891..... | 971,259 | 77,827 |
| 1877..... | 301,317 | 4,829 | 1892..... | 823,733 | 93,988 |
| 1878..... | 327,959 | 5,468 | 1893..... | 960,312 | 102,827 |
| 1879..... | 306,648 | 8,468 | 1894..... | 1,103,694 | 89,786 |
| 1880..... | 432,188 | 14,217 | 1895..... | 1,011,235 | 96,836 |
| 1881..... | 395,382 | 14,245 | 1896..... | 1,106,661 | 116,774 |
| 1882..... | 412,682 | 37,576 | 1897..... | 986,130 | 101,848 |
| 1883..... | 486,811 | 44,388 | 1898..... | 1,150,029 | 99,189 |
| 1884..... | 474,405 | 62,665 | 1899..... | 1,293,169 | 101,004 |
| 1885..... | 427,937 | 71,003 | 1900..... | 1,787,777 | 62,776 |
| 1886..... | 520,703 | 78,443 | 1901..... | 1,573,661 | 53,894 |
| 1887..... | 580,965 | 89,098 | 1902..... | 2,090,268 | 23,453 |

TABLE 5.

COAL.

EXPORTS.—NOVA SCOTIA AND BRITISH COLUMBIA.

COAL.

Exports.

| Calendar Year. | Nova Scotia. | | *British Columbia. | |
|----------------|--------------|-----------|--------------------|------------|
| | Tons. | Value. | Tons. | Value. |
| 1874..... | 252,124 | \$647,539 | 51,001 | \$ 278,180 |
| 1875..... | 179,626 | 404,351 | 65,842 | 356,018 |
| 1876..... | 126,520 | 263,543 | 116,910 | 627,754 |
| 1877 | 173,389 | 352,453 | 118,252 | 590,263 |
| 1878 | 154,114 | 293,795 | 165,734 | 698,870 |
| 1879..... | 113,742 | 203,407 | 186,094 | 608,845 |
| 1880 | 199,552 | 344,148 | 219,878 | 775,008 |
| 1881..... | 193,081 | 311,721 | 187,791 | 622,965 |
| 1882..... | 216,954 | 390,121 | 179,552 | 628,437 |
| 1883..... | 192,795 | 336,088 | 271,214 | 946,271 |
| 1884..... | 222,709 | 430,330 | 245,478 | 901,440 |
| 1885..... | 176,287 | 349,650 | 250,191 | 1,000,764 |
| 1886..... | 240,459 | 441,693 | 274,466 | 960,649 |
| 1887..... | 207,941 | 390,738 | 356,657 | 1,262,552 |
| 1888..... | 165,863 | 330,115 | 405,071 | 1,605,650 |
| 1889..... | 186,608 | 396,830 | 470,683 | 1,918,263 |
| 1890..... | 202,387 | 426,070 | 508,882 | 1,977,191 |
| 1891..... | 194,867 | 417,816 | 767,734 | 2,958,695 |
| 1892..... | 181,547 | 407,980 | 599,716 | 2,317,734 |
| 1893..... | 203,198 | 470,695 | 708,228 | 2,693,747 |
| 1894..... | 310,277 | 633,398 | 770,439 | 2,855,216 |
| 1895..... | 241,091 | 534,479 | 728,283 | 2,692,562 |
| 1896..... | 380,149 | 787,270 | 679,799 | 2,507,752 |
| 1897..... | 307,128 | 642,754 | 630,341 | 2,221,737 |
| 1898..... | 309,158 | 629,363 | 813,843 | 2,948,428 |
| 1899†..... | 459,260 | 827,941 | 781,809 | 2,947,369 |

*See foot-note, table 16.

†Since 1899, exports by provinces have not been published in Trade and Navigation Report.

COAL.

Imports of
bituminous.

TABLE 6.

COAL.

IMPORTS OF BITUMINOUS COAL.

| Fiscal Year. | Tons. | Value. | Fiscal Year. | Tons. | Value. |
|--------------|-----------|-------------|--------------|-----------|-------------|
| 1880..... | 457,049 | \$1,220,761 | 1892..... | 1,615,220 | \$4,099,221 |
| 1881..... | 587,024 | 1,741,568 | 1893..... | 1,603,154 | 3,967,764 |
| 1882..... | 636,374 | 1,992,081 | 1894..... | 1,359,509 | 3,315,094 |
| 1883..... | 911,629 | 2,996,198 | 1895..... | 1,444,928 | 3,321,387 |
| 1884..... | 1,118,615 | 3,613,470 | 1896..... | 1,538,489 | 3,299,025 |
| 1885..... | 1,011,875 | 3,197,539 | 1897..... | 1,543,476 | 3,254,217 |
| 1886..... | 930,949 | 2,591,554 | 1898..... | 1,684,024 | 3,179,595 |
| 1887..... | 1,149,792 | 3,126,225 | 1899..... | 2,171,358 | 3,691,946 |
| 1888..... | 1,231,234 | 3,451,661 | 1900..... | 2,439,764 | 4,310,964 |
| 1889..... | 1,248,540 | 3,255,171 | 1901..... | 2,516,392 | 4,956,025 |
| 1890..... | 1,409,282 | 3,528,959 | 1902* | 3,047,392 | 5,712,058 |
| 1891..... | 1,598,855 | 4,060,896 | | | |

*Duty, 53c. per ton.

TABLE 7.

COAL.

IMPORTS OF ANTHRACITE COAL.

| Fiscal Year. | Tons. | Value. | Fiscal Year. | Tons. | Value. |
|--------------|------------|-------------|--------------|-----------|-------------|
| 1880..... | 516,729 | \$1,509,960 | 1892..... | 1,479,106 | \$5,640,346 |
| 1881..... | 572,092 | 2,325,937 | 1893..... | 1,500,550 | 6,355,285 |
| 1882..... | 638,273 | 2,666,356 | 1894..... | 1,530,522 | 6,354,040 |
| 1883..... | 754,891 | 3,344,936 | 1895..... | 1,404,342 | 5,350,627 |
| 1884..... | 868,000 | 3,831,283 | 1896..... | 1,574,355 | 5,667,096 |
| 1885..... | 910,324 | 3,909,844 | 1897..... | 1,457,295 | 5,695,168 |
| 1886..... | 995,425 | 4,028,050 | 1898..... | 1,460,701 | 5,874,685 |
| 1887..... | 1,100,165 | 4,423,062 | 1899..... | 1,745,460 | 6,490,509 |
| 1888..... | +2,138,627 | 5,291,875 | 1900..... | 1,654,401 | 6,602,912 |
| 1889..... | 1,291,705 | 5,199,481 | 1901..... | 1,933,283 | 7,923,950 |
| 1890..... | 1,201,335 | 4,595,727 | 1902* | 1,652,451 | 7,021,939 |
| 1891..... | 1,399,067 | 5,224,452 | | | |

*Coal anthracite, and anthracite coal dust. Duty free.

†In Table 7, Imports of Anthracite Coal, a very considerable increase will be noticed in 1888 over 1887, an increase of over ninety-four per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888 and 1889, were \$4.02, \$2.47 and \$4.03 respectively. Although a duty of fifty cents per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation Report, no explanation is available.

TABLE 8.
COAL.
IMPORTS OF COAL DUST.

COAL.

Imports of
dust.

| Fiscal Year. | Tons. | Value. | Fiscal Year. | Tons. | Value. |
|--------------|--------|----------|--------------|---------|----------|
| 1880..... | 3,565 | \$ 8,877 | 1892..... | 82,091 | \$39,840 |
| 1881..... | 337 | 666 | 1893..... | 109,585 | 44,474 |
| 1882..... | 471 | 900 | 1894..... | 117,573 | 49,510 |
| 1883..... | 8,154 | 10,082 | 1895..... | 181,318 | 52,221 |
| 1884..... | 12,782 | 14,600 | 1896..... | 210,386 | 53,742 |
| 1885..... | 20,185 | 20,412 | 1897..... | 225,562 | 59,609 |
| 1886..... | 36,230 | 36,996 | 1898..... | 229,445 | 45,556 |
| 1887..... | 31,401 | 33,178 | 1899..... | 276,547 | 44,717 |
| 1888..... | 28,808 | 34,730 | 1900..... | 330,174 | 98,349 |
| 1889..... | 39,980 | 47,139 | 1901..... | 414,432 | 275,559 |
| 1890..... | 53,104 | 29,818 | 1902*..... | 489,548 | 264,550 |
| 1891..... | 60,127 | 36,130 | | | |

*Duty, 20 p. c., not over 13c. per ton.

An approximation of the consumption of coal in Canada sufficiently accurate for purposes of comparison may be made as follows, if we assume the figures of imports for the fiscal year to represent closely enough the importation during the calendar year.

| | Tons. | Tons. |
|----------------------------------------------------------------|-----------|------------|
| Production, Table 3..... | 7,193,142 | |
| Exports of coal the produce of Canada, Table 4 | 2,090,268 | |
| Home consumption of Canadian coal..... | | 5,102,874 |
| Imports of bituminous, anthracite and coal dust | | |
| Tables 6, 7 and 8..... | 5,189,391 | |
| Exports of coal not the product of Canada.... | 23,453 | |
| Home consumption of imported coal..... | | 5,165,938 |
| Total consumption of coal in Canada, home and imported..... | | 10,268,812 |

Table 9 embodies similar calculations for each year since 1886. Therein is shown the consumption of Canadian and imported coal and the percentage of each as well as the total production per capita. It will be seen that not only the total consumption, but the consumption per capita also has been steadily increasing.

It will be observed too that the proportion of the consumption mined in Canada was greater in 1902 than in any previous year.

An examination of the relation of the total production in Canada, to the amount of coal consumed in the country shows, that in 1902

CONT.

the production amounted to over 70 per cent of the consumption as compared with 65.8 per cent in 1901 and 68.5 per cent in 1900. In 1890 the proportion was 62.4 per cent, and in 1886, 60.8 per cent.

TABLE 9.

COAL.

Consumption.

CONSUMPTION OF COAL IN CANADA.

| Calendar Year. | Canadian. | Imported. | Total. | Percentage Canadian. | Percentage Imported. | Consumption per capita. |
|----------------|-----------|-----------|------------|----------------------|----------------------|-------------------------|
| | Tons. | Tons. | Tons. | | | Tons. |
| 1886..... | 1,595,950 | 1,884,161 | 3,480,111 | 45·9 | 54·1 | ·758 |
| 1887..... | 1,848,365 | 2,192,260 | 4,040,625 | 45·7 | 54·3 | ·871 |
| 1888..... | 2,013,925 | 3,314,353 | 5,328,278 | 37·8 | 62·2 | 1·137 |
| 1889..... | 1,992,988 | 2,490,931 | 4,483,919 | 44·4 | 55·6 | ·946 |
| 1890..... | 2,360,196 | 2,581,187 | 4,941,383 | 47·8 | 52·2 | 1·031 |
| 1891..... | 2,606,490 | 2,980,222 | 5,586,712 | 46·7 | 53·3 | 1·153 |
| 1892..... | 2,464,012 | 3,082,429 | 5,546,441 | 44·4 | 55·6 | 1·133 |
| 1893..... | 2,823,187 | 3,110,462 | 5,933,649 | 47·6 | 52·4 | 1·198 |
| 1894..... | 2,743,376 | 2,917,818 | 5,661,194 | 48·5 | 51·5 | 1·130 |
| 1895..... | 2,467,109 | 2,933,752 | 5,400,861 | 45·7 | 54·3 | 1·066 |
| 1896..... | 2,639,055 | 3,206,456 | 5,845,511 | 45·1 | 54·9 | 1·140 |
| 1897..... | 2,799,977 | 3,124,485 | 5,924,462 | 47·3 | 52·7 | 1·143 |
| 1898..... | 3,022,553 | 3,274,981 | 6,297,534 | 48·0 | 52·0 | 1·200 |
| 1899..... | 3,631,882 | 4,092,361 | 7,724,243 | 47·0 | 53·0 | 1·454 |
| 1900..... | 3,820,889 | 4,361,563 | 8,182,452 | 46·7 | 53·3 | 1·521 |
| 1901..... | 4,653,691 | 4,810,213 | 9,463,904 | 49·1 | 50·9 | 1·761 |
| 1902..... | 5,102,874 | 5,165,938 | 10,268,812 | 49·7 | 50·3 | 1·877 |

Nova Scotia. NOVA SCOTIA.

Detailed statistics of the production of coal in the province are given in Tables 10, 11, 12 and 13.

The production amounted in 1902 to 5,161,316 tons, being an increase over that of the previous year of over 24 per cent. The average value of the production for the year was about \$2 per long ton.

TABLE 10.

COAL.

Nova Scotia :—OUTPUT, SALES, COLLERY CONSUMPTION, AND PRODUCTION.

| Calendar Year. | Output, Tons, 2,240 lbs. | Sales, Tons, 2,240 lbs. | Collery Consump- tion, Tons, 2,240 lbs. | Production* Tons 2,240 lbs. | Output, Tons, 2,000 lbs. | Sales, Tons, 2,000 lbs. | Collery Consump- tion, Tons, 2,000 lbs. | Production* Tons, 2,000 lbs. | Price per Ton. 2,240 lbs. | Value of production. |
|----------------|--------------------------------|-------------------------------|--------------------------------------------------|-----------------------------------|--------------------------------|-------------------------------|--------------------------------------------------|------------------------------------|---------------------------------|----------------------------|
| 1872..... | 880,950 | 785,914 | 110,341 | 896,255 | 986,664 | 880,224 | 123,582 | 1,003,806 | \$1 75 | \$1,568,446 |
| 1873..... | 1,051,467 | 881,106 | 108,398 | 989,504 | 1,177,643 | 986,839 | 121,406 | 1,108,245 | 1 75 | 1,731,632 |
| 1874..... | 872,720 | 749,127 | 119,582 | 863,709 | 977,446 | 839,022 | 133,932 | 972,954 | 1 75 | 1,520,240 |
| 1875..... | 781,165 | 706,795 | 124,110 | 830,905 | 874,905 | 791,610 | 139,003 | 930,613 | 1 75 | 1,454,084 |
| 1876..... | 709,646 | 634,207 | 113,788 | 747,995 | 794,804 | 710,312 | 127,443 | 837,755 | 1 75 | 1,308,991 |
| 1877..... | 757,496 | 687,065 | 98,841 | 785,906 | 848,396 | 769,513 | 110,702 | 880,215 | 1 75 | 1,375,339 |
| 1878..... | 770,603 | 693,511 | 88,627 | 782,138 | 863,075 | 776,732 | 99,262 | 875,994 | 1 75 | 1,368,741 |
| 1879..... | 788,271 | 688,624 | 84,787 | 773,411 | 882,863 | 771,259 | 94,961 | 866,220 | 1 75 | 1,353,469 |
| 1880..... | 1,032,710 | 954,659 | 96,831 | 1,051,490 | 1,156,635 | 1,069,218 | 108,451 | 1,177,669 | 1 75 | 1,840,108 |
| 1881..... | 1,124,270 | 1,035,014 | 107,888 | 1,142,902 | 1,259,183 | 1,159,216 | 120,834 | 1,280,050 | 1 75 | 2,000,079 |
| 1882..... | 1,365,811 | 1,250,179 | 111,381 | 1,361,560 | 1,529,708 | 1,400,200 | 124,747 | 1,524,947 | 1 75 | 2,382,730 |
| 1883..... | 1,422,553 | 1,297,523 | 111,949 | 1,409,472 | 1,593,259 | 1,453,226 | 125,383 | 1,578,609 | 1 75 | 2,466,576 |
| 1884..... | 1,389,295 | 1,261,650 | 116,769 | 1,378,419 | 1,556,011 | 1,413,048 | 130,781 | 1,543,829 | 1 75 | 2,412,233 |
| 1885..... | 1,352,205 | 1,254,510 | 127,624 | 1,382,134 | 1,514,470 | 1,405,051 | 142,939 | 1,547,990 | 1 75 | 2,418,735 |
| 1886..... | 1,502,611 | 1,373,666 | 142,421 | 1,516,087 | 1,682,924 | 1,538,506 | 159,512 | 1,698,018 | 1 75 | 2,653,152 |
| 1887..... | 1,670,830 | 1,519,684 | 139,777 | 1,659,461 | 1,871,330 | 1,702,046 | 166,550 | 1,858,596 | 1 75 | 2,904,057 |
| 1888..... | 1,776,128 | 1,576,692 | 157,443 | 1,734,135 | 1,989,263 | 1,765,895 | 176,336 | 1,942,231 | 1 75 | 3,034,735 |
| 1889..... | 1,756,279 | 1,555,107 | 158,131 | 1,713,238 | 1,967,032 | 1,741,720 | 177,107 | 1,918,827 | 1 75 | 2,998,167 |
| 1890..... | 1,984,001 | 1,786,111 | 161,240 | 1,947,351 | 2,222,081 | 2,000,444 | 180,589 | 2,181,033 | 1 75 | 3,407,864 |
| 1891..... | 2,044,784 | 1,849,945 | 174,933 | 2,024,928 | 2,290,158 | 2,071,938 | 195,981 | 2,267,919 | 1 75 | 3,543,624 |
| 1892..... | 1,942,780 | 1,752,934 | 175,092 | 1,928,026 | 2,175,913 | 1,963,286 | 196,103 | 2,159,389 | 1 75 | 3,374,046 |
| 1893..... | 2,223,042 | 1,977,543 | 205,425 | 2,182,968 | 2,489,807 | 2,214,848 | 230,076 | 2,444,924 | 1 75 | 3,820,194 |
| 1894..... | 2,250,631 | 2,060,920 | 196,206 | 2,257,126 | 2,520,707 | 2,303,231 | 219,751 | 2,527,982 | 1 75 | 3,949,970 |
| 1895..... | 1,999,756 | 1,793,098 | 193,639 | 1,986,737 | 2,239,727 | 2,008,270 | 216,875 | 2,225,145 | 1 75 | 3,476,790 |
| 1896..... | 2,292,675 | 2,046,828 | 192,975 | 2,239,803 | 2,567,796 | 2,292,447 | 216,132 | 2,508,579 | 1 75 | 3,919,655 |
| 1897..... | 2,340,031 | 2,044,672 | 181,716 | 2,226,388 | 2,620,835 | 2,290,032 | 203,522 | 2,493,554 | 1 75 | 3,896,179 |
| 1898..... | 2,262,656 | 2,121,126 | 167,428 | 2,288,554 | 2,534,175 | 2,375,661 | 187,519 | 2,563,180 | 1 75 | 4,004,970 |
| 1899..... | 2,865,443 | 2,633,989 | 177,460 | 2,811,449 | 3,209,296 | 2,950,067 | 198,755 | 3,148,822 | 2 00 | 5,622,898 |
| 1900..... | 2,998,737 | 3,298,791 | 3,411,127 | 236,563 | 3,694,646 | 3,358,585 | 264,951 | 3,623,536 | 2 50 | 8,088,250 |
| 1901..... | 3,821,033 | 3,411,127 | 301,434 | 3,712,561 | 4,279,557 | 3,820,462 | 337,606 | 4,158,068 | 1 75 | 6,496,982 |
| 1902..... | 4,725,480 | 4,229,120 | 379,198 | 4,608,318 | 5,292,538 | 4,736,614 | 424,702 | 5,161,316 | 2 00 | 9,216,636 |

* This Production is obtained by adding Sales and Collery Consumption. For sales previous to 1872, see report of the Department of Mines Nova Scotia, 1883, page 68.

COAL.
Nova Scotia.

COAL.

Nova Scotia.

TABLE 11.
COAL,
NOVA SCOTIA :—COAL TRADE BY COUNTIES.

| CALENDAR YEAR. | CUMBERLAND. | | PICTOU. | | CAPE BRETON. | | OTHER COUNTIES. | |
|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | Raised. | Sold. | Raised. | Sold. | Raised. | Sold. | Raised. | Sold. |
| | Tons, 2,000 lbs. | Tons, 2,000 lbs. | Tons, 2,000 lbs. | Tons, 2,000 lbs. | Tons, 2,000 lbs. | Tons, 2,000 lbs. | Tons, 2,000 lbs. | Tons, 2,000 lbs. |
| 1st quarter. | 150,993 | 111,097 | 126,349 | 103,482 | 783,718 | 567,542 | 20,043 | 16,214 |
| 2nd " " | 143,515 | 126,137 | 142,015 | 129,274 | 950,189 | 886,849 | 33,648 | 22,976 |
| 3rd " " | 163,862 | 151,087 | 174,944 | 164,203 | 1,088,652 | 1,106,589 | 37,050 | 30,770 |
| 4th " " | 163,421 | 150,664 | 191,997 | 173,181 | 1,064,344 | 950,266 | 57,798 | 46,283 |
| Total, 1902. | 621,791 | 538,985 | 635,305 | 570,140 | 3,886,903 | 3,511,246 | 148,539 | 116,243 |
| " 1901. | 538,773 | 447,616 | 533,840 | 460,349 | 3,116,641 | 2,888,610 | 40,303 | 23,887 |

TABLE 12.

COAL.

NOVA SCOTIA:—OUTPUT BY COLLIERIES DURING THE CALENDAR YEAR, 1902.

COAL.

Nova Scotia.

| Colliery. | Tons, 2,000 lbs. | Colliery. | Tons, 2,000 lbs. |
|---------------------------------------|---------------------|---------------------------------------|---------------------|
| <i>Cumberland County.</i> | | | |
| Chignecto..... | 4,607 | Mabou | 1,120 |
| Joggins..... | 58,580 | Pt. Hood | 57,188 |
| Jubilee..... | 883 | Broad Cove..... | 76,749 |
| Scotia..... | 1,047 | | |
| Springhill..... | 554,322 | <i>Victoria County.</i> | |
| Strathcona..... | 2,352 | New Campbellton..... | 13,481 |
| <i>Pictou County.</i> | | | |
| Acadia..... | 357,418 | Dominion Coal Co..... | 3,555,134 |
| Nova Scotia Steel and Coal Co..... | 35,766 | Nova Scotia Steel and Coal Co..... | 296,338 |
| Intercolonial..... | 242,122 | Gowrie and Blockhouse.... | 26,208 |
| | | Sydney..... | 9,223 |
| | | Total..... | 5,292,538 |

TABLE 13.

COAL.

NOVA SCOTIA:—DISTRIBUTION OF COAL SOLD.

| Markets. | Calendar Years. | | | |
|---------------------------------------|---------------------|--------------|---------------------|--------------|
| | 1901. | | 1902. | |
| | Tons, 2,000 lbs. | Per cent. | Tons, 2,000 lbs. | Per cent. |
| Nova Scotia, transported by land..... | 757,975 | 19·8 | 468,658 | 9·9 |
| " " sea..... | 533,569 | 14·0 | 1,175,644 | 24·8 |
| Total, Nova Scotia..... | 1,291,544 | 33·8 | 1,644,302 | 34·7 |
| New Brunswick..... | 366,976 | 9·6 | 358,664 | 7·6 |
| Prince Edward Island..... | 78,324 | 2·1 | 70,316 | 1·5 |
| Quebec..... | 1,315,935 | 34·4 | 1,492,902 | 31·5 |
| Newfoundland..... | 124,265 | 3·3 | 118,041 | 2·5 |
| United States..... | 623,390 | 16·3 | 1,004,650 | 21·2 |
| West Indies..... | | | 6,700 | ·1 |
| Other countries..... | 20,028 | ·5 | 41,039 | ·9 |
| Total..... | 3,820,462 | 100·0 | 4,736,614 | 100·0 |

NEW BRUNSWICK.

New
Brunswick.

The production of coal in this province in 1902 was 18,795 tons valued at \$39,680, a slight increase in quantity over the previous year, but realizing a somewhat lower price per ton at the mines.

COAL.

New
Brunswick.

TABLE 14.

COAL.
NEW BRUNSWICK :—PRODUCTION.

| Calendar Year. | Tons. | Value. | Value per ton. |
|----------------|--------|-----------|----------------|
| 1887..... | 10,040 | \$ 23,607 | \$2 35 |
| 1888..... | 5,730 | 11,050 | 1 93 |
| 1889..... | 5,673 | 11,733 | 2 07 |
| 1890..... | 7,110 | 13,850 | 1 95 |
| 1891..... | 5,422 | 11,030 | 2 03 |
| 1892..... | 6,768 | 9,375 | 1 39 |
| 1893..... | 6,200 | 9,837 | 1 59 |
| 1894..... | 6,469 | 10,264 | 1 59 |
| 1895..... | 9,500 | 14,250 | 1 50 |
| 1896..... | 7,500 | 11,250 | 1 50 |
| 1897..... | 6,000 | 9,000 | 1 50 |
| 1898..... | 6,160 | 9,240 | 1 50 |
| 1899..... | 10,528 | 15,792 | 1 50 |
| 1900..... | 10,000 | 15,000 | 1 50 |
| 1901..... | 17,630 | 51,857 | 2 94 |
| 1902..... | 18,795 | 39,680 | 2 11 |

Northwest Territories.

NORTHWEST TERRITORIES.

One of the main features to record, in connection with coal mining operations in the North-west Territories in 1902 is the large output of coal from the new collieries at Frank, Alberta, on the Crows Nest Pass branch of the Canadian Pacific Railway.

The total product of the Territories for the year has been returned as 478,129 tons valued at \$1,110,521 and made up as follows :*—

| | Tons. |
|--------------------------------|---------|
| Estevan and Coalfields..... | 70,400 |
| Lethbridge..... | 153,703 |
| Miscellaneous small mines..... | 15,841 |
| Anthracite and Canmore..... | 107,950 |
| Frank and Blairmore..... | 125,325 |
| Yukon district..... | 4,910 |
| | 478,129 |

Of this amount 16,550 tons is anthracite coal and the balance bituminous and lignite.

* Since writing the above the annual report of the Department of Public Works of the Northwest Territories for 1902 has been received in which the output of the coal mines of the Territories (not including the Yukon) is given as :—

| | |
|------------------------------|--------------|
| Bituminous and lignite | 494,087 tons |
| Anthracite coal..... | 16,587 " |
| total..... | 510,674 " |

Although the figures of production in the present report represent sales and shipments only, it is still possible that they are incomplete owing to there being so many producers of coal on a small scale in the Territories.

TABLE 15.
COAL.
NORTH-WEST TERRITORIES :—PRODUCTION.

COAL.
North-west Territories.

| Calendar Year. | Tons. | Value. | Value per ton. |
|----------------|---------|------------|----------------|
| 1887..... | 74,152 | \$ 157,577 | \$ 2 13 |
| 1888..... | 115,124 | 183,354 | 1 59 |
| 1889.... | 97,364 | 179,640 | 1 85 |
| 1890.... | 128,953 | 198,498 | 1 54 |
| 1891. | 174,131 | 437,243 | 2 51 |
| 1892. | 184,370 | 469,930 | 2 55 |
| 1893..... | 238,395 | 598,745 | 2 51 |
| 1894. | 199,991 | 488,980 | 2 45 |
| 1895..... | 185,654 | 414,064 | 2 23 |
| 1896.... | 225,868 | 606,891 | 2 69 |
| 1897.... | 267,163 | 667,908 | 2 50 |
| 1898..... | 340,088 | 825,220 | 2 43 |
| 1899..... | 334,600 | 811,500 | 2 43 |
| 1900..... | 351,950 | 839,375 | 2 38 |
| 1901..... | 391,139 | 1,008,917 | 2 58 |
| 1902..... | 478,129 | 1,110,521 | 2 32 |

BRITISH COLUMBIA.

British Columbia.

The total sales and shipments including colliery consumption and not including coal used for making coke were in 1902 1,370,448 long tons or 1,534,902 short tons, being a decrease from the previous year of about 7·5 per cent: 244,232 long tons were used for making coke during the year, and 26,946 long tons were added to stock, so that the total output of the collieries for the year was 1,641,626 long tons.

Statistics of output, home consumption, quantity sold for export, etc., are shown in Table 16.

COAL.

British
Columbia.

TABLE 16.

COAL.

BRITISH COLUMBIA :—PRODUCTION.

| Calendar Year. | Output Tons, 2,240 lbs. | Home Con- sumption, Tons, 2,240 lbs. | Sold for Export, Tons. 2,240 lbs. † | PRODUCTION.* | | Price per ton, 2,240 lbs. | Value. |
|-------------------|-------------------------------|-----------------------------------------------|-------------------------------------------------|---------------------|---------------------|---------------------------------|-----------|
| | | | | Tons. 2,240 lbs. | Tons, 2,000 lbs. | | |
| 1836-52.. | 10,000 | | | 11,200 | 4 00 | \$ 40,000 | |
| 1852-59.. | 25,898 | | | 28,446 | 4 00 | 101,592 | |
| 1859 †... . | 1,989 | | | 2,228 | 4 00 | 7,956 | |
| 1860.... | 14,247 | | | 15,957 | 4 00 | 56,988 | |
| 1861.... | 13,774 | | | 15,427 | 4 00 | 55,096 | |
| 1862.... | 18,118 | | | 20,292 | 4 00 | 72,472 | |
| 1863.... | 21,345 | | | 23,906 | 4 00 | 85,380 | |
| 1864.... | 28,632 | | | 32,068 | 4 00 | 114,528 | |
| 1865.... | 32,819 | | | 36,757 | 4 00 | 131,276 | |
| 1866.... | 25,115 | | | 28,129 | 4 00 | 100,460 | |
| 1867.... | 31,239 | | | 34,988 | 4 00 | 124,956 | |
| 1868.... | 44,005 | | | 49,286 | 4 00 | 176,020 | |
| 1869.... | 35,802 | | | 40,098 | 4 00 | 143,208 | |
| 1870.... | 29,843 | | | 33,424 | 4 00 | 119,372 | |
| 1871-2-3. | 148,459 | | | 166,274 | 4 00 | 593,836 | |
| 1874.... | 81,547 | 25,023 | 56,038 | 81,061 | 90,788 | 3 00 | 243,183 |
| 1875.... | 110,145 | 31,252 | 66,392 | 97,644 | 109,361 | 3 00 | 292,932 |
| 1876.... | 139,192 | 17,856 | +122,329 | 140,185 | 157,007 | 3 00 | 420,555 |
| 1877.... | 154,052 | 24,311 | 115,381 | 139,692 | 156,455 | 3 00 | 419,076 |
| 1878.... | 170,846 | 26,166 | 164,682 | 190,848 | 213,750 | 3 00 | 572,544 |
| 1879.... | 241,301 | 40,294 | 192,096 | 232,390 | 260,277 | 3 00 | 697,170 |
| 1880.... | 267,595 | 46,513 | 225,849 | 272,362 | 305,045 | 3 00 | 817,086 |
| 1881.... | 228,357 | 40,191 | 189,323 | 229,514 | 257,056 | 3 00 | 688,542 |
| 1882.... | 282,139 | 56,161 | 232,411 | 288,572 | 323,201 | 3 00 | 865,716 |
| 1883.... | 213,299 | 64,786 | 149,567 | 214,353 | 240,075 | 3 00 | 643,059 |
| 1884.... | 394,070 | 87,388 | 306,478 | 393,866 | 441,130 | 3 00 | 1,181,598 |
| 1885.... | 365,596 | 95,227 | 237,797 | 333,024 | 372,987 | 3 00 | 999,072 |
| 1886.... | 326,636 | 85,987 | 249,205 | 335,192 | 375,415 | 3 00 | 1,005,576 |
| 1887.... | 413,360 | 99,216 | 334,839 | 434,055 | 486,142 | 3 00 | 1,302,165 |
| 1888.... | 489,301 | 115,953 | 365,714 | 481,667 | 539,467 | 3 00 | 1,445,001 |
| 1889.... | 579,830 | 124,574 | 443,675 | 568,249 | 636,439 | 3 00 | 1,704,747 |
| 1890.... | 678,140 | 177,075 | 508,270 | 685,345 | 767,586 | 3 00 | 2,056,035 |
| 1891.... | 1,029,097 | 202,697 | 806,479 | 1,009,176 | 1,130,277 | 3 00 | 3,027,528 |
| 1892.... | 826,335 | 196,223 | 640,579 | 836,802 | 937,218 | 3 00 | 2,510,406 |
| 1893.... | 978,294 | 207,851 | 768,917 | 976,768 | 1,093,980 | 3 00 | 2,930,304 |
| 1894.... | 1,012,953 | 165,776 | 827,642 | 993,418 | 1,112,628 | 3 00 | 2,980,254 |
| 1895.... | 939,654 | 188,349 | 756,334 | 944,683 | 1,058,045 | 3 00 | 2,834,049 |
| 1896.... | 894,882 | 261,984 | 634,238 | 896,222 | 1,003,769 | 3 00 | 2,688,666 |
| 1897.... | 892,296 | 290,310 | 619,860 | 910,170 | 1,019,390 | 3 00 | 2,730,510 |
| 1898.... | 1,136,015 | 374,953 | 752,863 | 1,127,816 | 1,263,154 | 3 00 | 3,383,448 |
| 1899.... | 1,306,324 | 526,058 | 751,711 | 1,277,769 | 1,431,101 | 3 00 | 3,833,307 |
| 1900.... | 1,590,178 | 535,084 | 914,184 | 1,449,268 | 1,623,180 | 3 00 | 4,347,804 |
| 1901.... | 1,691,557 | 568,440 | 914,163 | 1,482,603 | 1,660,515 | 3 00 | 4,447,809 |
| 1902.... | 1,641,626 | 593,639 | 776,809 | 1,370,448 | 1,534,902 | 3 00 | 4,111,344 |

*This production is obtained by adding 'Home Consumption' and 'Sold for Export',
†52,935 of this amount was exported as sales without the division into the 'Home Consumption' and 'Sold for Export.'

†The figures in the 'Sold for Export' column do not agree as they should with those given in Table 5, the only explanation being that the data in the two cases are from different sources, and it has not been possible to find out the cause of the difference.

†Two months only.

Statistics of coal production in 1902 are given in the Annual Report COAL of the Minister of Mines for the province as follows :

British Columbia.

| SALES AND OUTPUT FOR YEAR. Tons of 2240 lbs. | Tons. | Cwt. | Tons. | Cwt. | Statistics production. |
|-------------------------------------------------|-----------|------|-----------|------|------------------------|
| Sold for consumption in Canada..... | 422,466 | 13 | | | |
| " export to U.S.A..... | 775,300 | 11 | | | |
| " " to other countries | 1,508 | | | | |
| Total sales..... | 1,199,275 | 04 | | | |
| Used under colliery boilers &c..... | 171,172 | 15 | | | |
| Total sales and colliery consumption..... | | | 1,370,447 | 19 | |
| Used in making coke..... | | | 244,232 | | |
| Stock on hand first of year..... | 5,704 | 17 | 1,614,679 | 19 | |
| " " last of year..... | 32,651 | | | | |
| Difference added to stock during the year | | | 26,946 | 03 | |
| Output of collieries for year..... | | | 1,641,626 | 02 | |

Statistics of labour and wages are given in the same report as Statistics of labour and wages follows :

Number of hands employed, daily wages paid etc.

| CHARACTER OF LABOUR. | UNDERGROUND. | | ABOVE GROUND. | | TOTAL. | |
|------------------------------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|
| | No. of employees | Average daily wage | No. of employees | Average daily wage | No. of employees | Average daily wage |
| Supervision and clerical assistance..... | 63 | \$ 4 30 | 48 | \$ 4 85 | 111 | \$ 4 57 |
| Whites— | | | | | | |
| Miners..... | 1,625 | 4 30 | | | 1,625 | 4 30 |
| Miners' helpers | 494 | 2 40 | | | 494 | 2 40 |
| Labourers | 569 | 2 73 | 206 | 2 34 | 775 | 2 53 |
| Mechanics and skilled labour | 47 | 2 81 | 199 | 3 10 | 246 | 2 95 |
| Boys..... | 133 | 1 42 | 23 | 1 15 | 156 | 1 28 |
| Japanese | 38 | 1 37 | 46 | 1 12 | 84 | 1 24 |
| Chinese | 132 | 1 37 | 388 | 1 21 | 520 | 1 29 |
| Totals..... | 3,101 | | 910 | | 4,011 | |

In view of the fact that 75 per cent of the production of Vancouver island collieries is exported to California, the following statistics of

receipts of coal in the Californian market are given as illustrating the position which British Columbia coal occupies in this market :

| Whence derived. | 1901. | 1902. |
|------------------------------------------|---------------------|---------------------|
| | Tons, 2,240 lbs. | Tons, 2,240 lbs. |
| British Columbia..... | 710,330 | 591,732 |
| Australia..... | 175,959 | 197,328 |
| England and Wales..... | 52,270 | 85,621 |
| Scotland..... | | 1,600 |
| Eastern (Cumberland and Anthracite)..... | 27,370 | 21,133 |
| Seattle (Washington)..... | 240,574 | 165,237 |
| Tacoma " | 433,817 | 209,358 |
| Mount Diable, Coos Bay and Tesla..... | 143,318 | 111,209 |
| Japan and Rocky Mountains..... | 51,147 | 47,380 |
| Totals. | 1,834,785 | 1,445,598 |

Coal
producers.

Following is a list of the principal coal producers in Canada.

Nova Scotia :—

- Inverness Railway and Coal Company .. Broad Cove, C.B.
- Gowrie and Blockhouse Collieries, Ltd .. Port Morien, C.B.
- Mabou Coal Mining Company, Ltd Mabou, C.B.
- Port Hood Coal Company, Ltd Port Hood, C.B.
- Cape Breton Coal Mining Co., Ltd New Campbellton, C.B
- Dominion Coal Co., Ltd Sydney, C.B.
- Sydney Coal Company, Ltd Sydney Mines C.B.
- Acadia Coal Co., Ltd Stellarton, N.S.
- Nova Scotia Steel & Coal Co., Ltd New Glasgow, N.S.
- Intercolonial Coal Mining Co., Ltd Westville, N.S.
- Cumberland Railway and Coal Co., Ltd .. Springhill, N.S.
- Canada Coals and Railway Co., Ltd Joggins Mines, N.S.
- Minudie Coal Co., Ltd River Hebert, N.S.
- Strathcona Coal Co. River Hebert, N.S.
- Messrs Ripley and Blenkhorn (Scotia Mine)

New Brunswick :—

- New Brunswick Coal & Railway Company .. Fredericton, N.B.

North West Territories :—

- Souris Coal Mining Company, Ltd R. R. Taylor, Managing Director, Winnipeg, Man.

| | | |
|-----------------------------------------------------------------------------|------------------------|--------------------|
| P. C. Duncan | Estevan, Assa. | COAL. |
| Frank Gillespie..... | Medicine Hat, Assa. | Coal producers. |
| Joseph Cully..... | " " | |
| Crockford Bros..... | " ; | |
| Alberta Railway and Coal Co.... | Lethbridge, Alta. | |
| Alberta Coke and Coal Co., (Martin B. Holway)..... | Cowley, " | |
| R. J. Galbraith..... | " " | |
| E. V. Wilson | Livingston, " | |
| Blackfoot Indian Agency, J. A. Markle, agent | Gleichen, " | |
| J. T. Cooper..... | Calgary, " | |
| J. A. Bangs..... | " " | |
| F. Barnes..... | Clover Bar, " | |
| Daly and Lindsay..... | " " | |
| Keith Fulton and Fowler. | " " | |
| E. Chevigny..... | Morinville, " | |
| Wm. Humberstone..... | Edmonton, " | |
| Milner and Blatchford..... | " " | |
| W. J. Baldwin..... | " " | |
| Bishopric, Grierson and Mays..... | " " | |
| Leon Moret | Ft. Saskatchewan, Alta | |
| Fishburn and Procter..... | Blairmore, Alta. | |
| The Canadian Am. Coal and Coke Co.... | " " | |
| United Gold Fields of British Columbia. | " " | |
| International Coal and Coke Co..... | " " | |
| The H. W. McNeil Co., Ltd..... | Anthracite " | |
| YUKON DISTRICT :— | | |
| North American Transportation and Trad- ing Co., Cliff Creek Mines | Dawson. | |
| Alaska Exploration Co., Rock Creek Mine. | " | |
| R. S. Ames and Geo. Miller, Five Fingers Mine..... | " | |
| BRITISH COLUMBIA :— | | |
| Crows Nest Pass Coal Co., Ltd..... | Fernie, B.C. | |
| Western Fuel Co..... | Nanaimo, B.C. | |
| Wellington Colliery Co., Ltd | Victoria, B.C. | |

COAL.

Coke.

Production.

COKE.

The sales of coke in 1902 amounted to 502,043 tons, valued at \$1,519,185, being an increase over the production of the previous year of 136,512 tons, or 37 per cent in quantity, and \$290,960, or over 23 per cent in value. The increase is to be all credited to the province of Nova Scotia, there being a slight falling off in British Columbia.

TABLE 1.
COKE.
ANNUAL PRODUCTION.

| Calendar Year. | Tons. | Value. | Value. per Ton. |
|----------------|---------|-----------|--------------------|
| 1886..... | 35,396 | \$101,940 | \$2 88 |
| 1887..... | 40,428 | 135,951 | 3 36 |
| 1888..... | 45,373 | 134,181 | 2 96 |
| 1889..... | 54,539 | 155,043 | 2 84 |
| 1890..... | 56,450 | 166,298 | 2 95 |
| 1891..... | 57,084 | 175,592 | 3 08 |
| 1892..... | 56,135 | 160,249 | 2 85 |
| 1893..... | 61,078 | 161,790 | 2 65 |
| 1894..... | 58,044 | 148,551 | 2 56 |
| 1895..... | 53,356 | 143,047 | 2 68 |
| 1896..... | 49,619 | 110,257 | 2 22 |
| 1897..... | 60,686 | 176,457 | 2 91 |
| 1898..... | 87,600 | 286,000 | 3 26 |
| 1899..... | 100,820 | 350,022 | 3 47 |
| 1900..... | 157,134 | 649,140 | 4 13 |
| 1901..... | 365,531 | 1,228,225 | 3 36 |
| 1902..... | 502,043 | 1,519,185 | 3 03 |

TABLE 2.
COKE.
PRODUCTION OF COKE BY PROVINCES.

| Calendar Year. | Nova Scotia. | | British Columbia. | |
|----------------|--------------|---------|-------------------|---------|
| | Tons. | Value. | Tons. | Value. |
| | | \$ | | \$ |
| 1897..... | 41,532 | 90,950 | 19,154 | 85,507 |
| 1898..... | 48,400 | 111,000 | 39,200 | 175,000 |
| 1899..... | 62,459 | 178,767 | 38,361 | 171,255 |
| 1900..... | 61,767 | 223,395 | 95,367 | 425,745 |
| 1901..... | 222,694 | 590,560 | 142,837 | 637,665 |
| 1902..... | 363,330 | 899,930 | 138,713 | 619,255 |

TABLE 3.
COKE.
EXPORTS OF COKE.

COAL.
Coke.
Exports.

| Calendar Year. | Tons. | Value. |
|----------------|--------|---------|
| | | \$ |
| 1897 | 2,987 | 6,078 |
| 1898 | 3,774 | 8,394 |
| 1899 | 5,557 | 18,726 |
| 1900 | 41,529 | 131,278 |
| 1901 | 57,505 | 176,990 |
| 1902 | 62,568 | 180,920 |

TABLE 4.
COKE.
IMPORTS OF OVEN COKE.

Imports of
oven coke.

| Fiscal Year. | Tons. | Value. | Fiscal Year. | Tons. | Value. |
|----------------|--------|---------|-----------------------|---------|---------|
| | | \$ | | | \$ |
| 1880 | 3,837 | 19,353 | 1892 | 43,499 | 194,429 |
| 1881 | 5,492 | 26,123 | 1893 | 41,821 | 156,277 |
| 1882 | 8,157 | 36,670 | 1894 | 42,864 | 176,996 |
| 1883 | 8,943 | 38,588 | 1895 | 43,235 | 149,434 |
| 1884 | 11,207 | 44,518 | 1896 | 61,612 | 203,826 |
| 1885 | 11,564 | 41,391 | 1897 | 83,330 | 267,540 |
| 1886 | 11,858 | 39,756 | 1898 | 135,060 | 347,040 |
| 1887 | 15,110 | 56,222 | 1899 | 141,284 | 362,826 |
| 1888 | 25,487 | 102,334 | 1900 | 187,878 | 506,839 |
| 1889 | 29,557 | 91,902 | 1901 | 308,786 | 680,138 |
| 1890 | 36,564 | 133,344 | 1902 . . . Duty free. | 267,142 | 842,815 |
| 1891 | 38,533 | 177,605 | | | |

Following is a list of companies making coke in Canada from Canadian coal :—

Nova Scotia.—Acadia Coal Co., Stellarton, N.S.

Intercolonial Coal Mining Co., Westville, N.S.

Nova Scotia Steel and Coal Co., New Glasgow, N.S.

Halifax Electric Tramway Co. (Ltd.), Halifax, N.S.

Dominion Iron and Steel Co. (Ltd.), Sydney, C.B.

British Columbia.—Crows Nest Pass Coal Co. (Ltd.), Fernie, B.C.

Wellington Colliery Co. (Ltd.), Victoria, B.C.

COAL.
Coke.

The production of coke in British Columbia is given in the provincial report as follows :

| Sales and Output for the Year. | Tons, 2,240 lbs. | Tons, 2,240 lbs. |
|------------------------------------------|---------------------|---------------------|
| Sold for consumption in Canada..... | 85,071 | |
| " export to United States..... | 38,780 | |
| - Total sales | 123,851 | |
| Stock on hand, first of year..... | 186 | |
| " " last " | 4,350 | |
| Diff. added to stock during the year.... | 4,164 | |
| Output for year..... | 128,015 | |

Peat.

Peat.—During the past few years many companies have been organized to manufacture peat-fuel from peat bogs in the provinces of Ontario and Quebec. Some of these have met with indifferent success, while others are still in the experimental stage or developing their properties.

Sales of peat during the past three years have been reported as follows :—

| | Tons. | Value. |
|----------------|-------|---------|
| Year 1900..... | 490 | \$1,200 |
| " 1901 | 220 | 660 |
| " 1902..... | 475 | 1,663 |

*THE COAL FIELDS OF CANADA.

The following short description of the coal fields of Canada will, in connection with the statistics already given, be found illustrative of the coal industry of the country. It has been compiled by Mr Theo. Denis, B. Sc., chiefly from information to be found throughout the Reports of the Geological Survey, supplemented by data taken from other reliable sources. As a guide for reference a full list of the maps published by the Geological Survey of Canada, covering the areas referred to in the course of this summary description has been added at the end of the article ; also a list of references forming a short bibliography of the subject. The maps may be obtained from the librarian of the Survey for the nominal sale prices mentioned in the

*This article, compiled originally by Mr. Theo. Denis, appeared in the Annual Report of the Mines Section for 1898, constituting Part S, Vol. XI of the reports of the Geological Survey Department. In compiling the present article he has not only brought the information up to date but has very much extended its scope.

"List of Publications of the Geological Survey of Canada" and COAL Supplement.

The chief fields are located as follows: In Nova Scotia there are several extensive areas of bituminous coal which have been mined for many years. In New Brunswick is a small area with thin seams, also bituminous. The above are all in rocks of Carboniferous age. In Manitoba and the North-west Territories, very large tracts of the prairie country are underlaid by coal beds, varying in quality from lignite in the east to bituminous in the west, as the foot-hills of the Rocky mountains are approached. In the mountain region itself is a small basin where anthracite is mined. Across the watershed in British Columbia is the Crow's Nest Pass field, now being opened up, and on the Pacific coast are the areas on the east side of Vancouver island, that have long been worked. These coal fields are of Cretaceous age. Coals referable to the same period are also found in the Queen Charlotte islands and in many parts of the interior of British Columbia. These Cretaceous coals are generally bituminous, but anthracite occurs in the Queen Charlotte islands. Tertiary fuels also underlie considerable areas in the interior as well as several tracts along the coast. These are usually lignites or brown coals.

Nova Scotia.

Nova Scotia.

The coal-bearing measures of Nova Scotia belong to the Carboniferous, and are practically confined to the one of its subdivisions generally known as the Coal Measures.

The coal mined in this province is all bituminous in quality.

The following sub-divisions into fields is usually adopted:—

1. The Sydney coal field.
2. The Inverness coal field.
3. The Richmond coal field.
4. The Pictou coal field.
5. The Cumberland coal field.

Sydney Coal Field.

This field is situated in the north-east corner of Cape Breton county, and also takes in a small portion of Victoria county. It occupies a land area of nearly 200 square miles, being about 32 miles long by six wide, and it is limited on three sides by the Atlantic Ocean. The conditions for extraction and shipment are very favourable. There is a remarkable

COAL.

absence of faults and the coast affords a number of natural harbours. The greater part of the coal-field is hidden beneath the sea, but the seams can be followed under its bed.

*The measures inclosing the Cape Breton coals are largely composed of argillaceous shales and sandstones, the solidity and coherence of which favour submarine exploitation. As to the general structure, it can be said that the seams appear on the shore, sweep inland, and again enter the ocean, forming segments of ellipses whose centres are out at sea. This structure is observable at Cow Bay, Glace Bay, Lingan and Sydney, these places presenting a series of basins, the seams of which have been correlated, and their equivalence in many cases proved. These basins probably owe their origin to a corrugation of the area by numerous folds which bring the same coal seams repeatedly to the surface along the north-east coast of the island.

The whole coast is deeply indented by bays and channels, approximately coinciding with the axes of these folds, and affording in the sea-cliffs numerous natural sections of the strata and exposures of the coal-seams. Some of these bays also constitute excellent harbours, one of which—Sydney Harbour—situated towards the centre of the district, ranks among the finest and most commodious on the Atlantic coast of North America. The cliffs are generally from thirty to eighty feet high, standing perpendicularly, or frequently overhanging the sea. The country inland is of a gently rolling character, the maximum height being about 250 feet.

Such natural advantages, combined with its highly favourable geographical position, point to this district as probably the most important in the Dominion for the supply of fuel to steamships navigating the Atlantic. During the few months of winter, when the more northerly harbours are closed or obstructed by ice, an outlet is afforded by the railway connecting many of the collieries with Louisburg, a fine harbour, open and safe for shipping at almost any season.

The aggregate thickness of coal in workable seams, outcropping on the shore, and for the most part exposed in the bays and cliffs, is from forty to fifty feet; the seams vary from three to nine feet in thickness. They generally dip at very low angles of five to twelve degrees and appear to be very little affected by faults or disturbances. As the strata all dip seaward, much of the coal will be available in the submarine as well as in the land areas. From experience at the Sydney mines it has been fully established that, with due caution and care, these submarine areas may be worked to a large extent.

*See "Descriptive Note on the Sydney coal-field" by Hugh Fletcher B.A., published by the Geological Survey of Canada 1900.

The coal is of the bituminous or 'soft' variety, with comparatively COAL little diversity in the quality of the different seams; all of which yield a fuel exceedingly well adapted for general purposes, while that of some of them is specially applicable to the manufacture of gas. As compared with the Pictou coal, it is characterized on the whole, by a greater proportion of combustible matter and a smaller proportion of ash; but on the other hand, it usually contains a greater amount of sulphur.

The following tabulation, condensed from the work of the Geological Survey shows the equivalency of the different seams of the field at the different places, together with the thickness of the intervening strata:

| Average thickness. | Cow Bay. | Glace Bay. | Lingan. | Sydney Mines. | Boulardarie. |
|--------------------|-------------|------------|----------------|-----------------|--------------|
| 3 feet..... | ..... | ..... | Seam A..... | ..... | Point Aconi. |
| 300 " | | | Cari Seams... | Lloyd's Cove.. | Bonar. |
| 6·5 " | ..... | ..... | Hub..... | Barrasois. | Stubbart. |
| 190 " | | | David Head.. | Seam B..... | |
| 12 " | ..... | ..... | Bouthillier.. | Sydney Main. | Seam C. |
| 350 " | | | Seam D..... | Bryant. | Mill Pond. |
| 7 " | Block House | Harbour.. | Back Pit.... | North Head.. | Edward |
| 275 " | | | Phelan..... | Lingan Main.. | Black Rock. |
| 3 " | ..... | ..... | Ross... | Seam F..... | Seam F. |
| 90 " | | | { Spencer | Seam G..... | Seam G. |
| 4 " | ..... | ..... | Emery...} | Collins. | |
| 110 " | McAulay... | ..... | Long Beach. | Gardiner ... | ..... |
| 7 " | | | | Seam H..... | ..... |
| 125 " | | | | | |
| 320 " | | | | | |
| 4 " | | | | | |

The correctness of the above correlation is, however, questioned by some. The aggregate thickness of coal in the workable beds outcropping on the shore, ranges from thirty feet at some places to sixty at others. Most of the Sydney coals are well suited for the manufacture of gas, as the following figures show:—

| Mines. | Gas, Cubic Feet per ton. | Candle power. | Coke produced. |
|----------------------------|-----------------------------------|------------------|-------------------|
| Little Glace Bay | 9,268 | 15 | 40 bush. |
| " International Mine | 9,700 | 14·75 | 39 " |
| Sydney Mines..... | 10,000 | 16 | 1,470 lbs. |
| Gowrie " | 8,200 | 8 | 1,295 " |
| Caledonia " | 9,000 | 15 | 1,230 " |
| Reserve " | 8,900 | 14·25 | 36 bush. |
| | 9,950 | 13·17 | 1,500 lbs. |

COAL.

Nova Scotia.

The value of these coals for steam and house purposes is given whenever obtainable in the table of analyses at the end of this article.

The Sydney coal-field was the first one opened in Canada. As early as 1785, work was done on it by the government. This, however, was of a desultory nature. In 1827, systematic and regular mining was begun by the General Mining Association.

The collieries at present in operation in this field are described below. Comparing the descriptions with the tabulation of the seams already given, it will be noted that the greater part of these are not at present under exploitation, although very extensive work has been done at different times on some of them. Should need arise, however, many of these would constitute a very important additional source of supply.

Sydney Mines Colliery.—This colliery was worked by the General Mining Association until 1900, when it was purchased from this corporation by the Nova Scotia Steel and Coal Company. This transaction practically terminated the connection of the General Mining Association with coal mining in Nova Scotia, after a career of nearly three-quarters of a century.

The colliery is situated three miles to the north-east of North Sydney.

Seam, 5 feet 4 inches. Dip 1 in 12.

Shaft, 690 feet deep; 13 feet diameter.

Worked by pillar and stall and longwall. Safety lamps.

Coal produced in 1902, 270,000 tons.*

Average number of persons employed above and underground, 1,000.

North Sydney Colliery.—Operated by the Sydney Coal Company.

Seam, 4 feet.

Worked by slope, 650 yards.

Method, pillar and stall. Naked lights.

Coal produced in 1902, 7,510 tons. Persons employed, 32.

New Campbellton Colliery.—Operated by the Cape Breton Coal Company.

Situated on the Big Bras d'Or lake.

Seam, 4 feet; dip, 1 in 5

* These figures of production are only approximate and are here given to illustrate the relative importance of the collieries.

| | |
|-------------------------------------------------------------|--------------|
| Slope, 600 yards. | COAL. |
| Coal-cutting machines. Method of working, pillar and stall. | Nova Scotia. |
| Naked lights. | |
| Coal produced in 1902, 13,443 tons. Persons employed, 36. | |

Gowrie and Block House Collieries.—Situated on Port Morien or Cow Bay. Operated by the Gowrie and Blockhouse Colliery, Limited. This company was organized in 1898, acquiring properties which had been idle for some time. The coal area controlled by this corporation covers five square miles, comprising leases 193, 146, 194, 206 and 235.

McAulay or Gowrie seam, 5 feet 6 inches. Worked by shaft, 205½ feet deep.

Coal-cutting machines. Coal produced in 1902, 20,000 tons.

Persons employed, 81.

Dominion Coal Company.—This company was incorporated in 1893. It holds a number of leases for a period of ninety-nine years in the coal basins of Cow Bay, Glace Bay and Lingan. The collieries which it is operating at present are enumerated below. Besides these, it owns others of importance which are not now being worked, such as the Victoria, Lingan, Cow Bay and Old Bridgeport, etc. The company has concentrated its operations on the Glace Bay basin, which it has developed to a great extent. The production of the Dominion Coal Company for 1902 amounted to nearly 3,306,000 tons, giving employment to 3,454 persons.

Caledonia Colliery, Glace Bay Basin.—Situated one mile from Little Glace Bay. Phelan seam worked; 7 to 8 feet.

Worked by pillar and room.

Underground haulage by endless rope.

Output for 1900, 573,298 tons.

Reserve Colliery, Glace Bay Basin.—On Phelan seam, 8 feet thick.

Worked by slopes, pillar and room method.

Endless rope haulage. Output for 1900, 707,927 tons.

International Mine, Glace Bay Basin.—Seam worked 'Harbour' 6 feet.

Method, pillar and room. Endless and tail rope systems of haulage.

Three-compartment shafts. Output for 1900, 249,427 tons.

COAL.
Nova Scotia. *Dominion No. 1, Glace Bay Basin.*—On Phelan seam. Dip, 1 in 14. Worked by pillar and room. Electric underground haulage.

Output for 1900, 602,825.

Dominion No. 2, Glace Bay Basin.—This colliery was opened in 1900. The shaft is a four-compartment one, 37' 11" down to 410 feet where it strikes the Harbour seam and is reduced to 21' 11" down to 850 feet where it strikes the Phelan seam.

Harbour seam 6½ feet, Phelan seam 8 feet.

This mine is equipped for a daily output of 6,000 tons.

Dominion No. 3, Glace Bay Basin.—Opened on Phelan seam in 1900. Mined by pillar and room method.

Entered by slopes two miles from Caledonia Colliery. Endless rope haulage. In 1902, the output of this mine had increased to 1900 tons a day.

Dominion No. 4, Glace Bay Basin.—Slope driven on Emery seam, 5 feet thick, about three quarters of a mile from the Caledonia colliery.

Beside the above mentioned workings, the Dominion Coal Company has erected a coal washing plant on the Sydney and Louisburg railway about three miles from Morien junction. The operation of coal washing by removing the finer stoney debris, diminishes the ash that would otherwise be contained in the material mined, by 41 per cent and the sulphur by 28 per cent. Water for the coal washers is obtained by gravitation from Morrison lake.

Inverness Coal Field.

This comprises a series of narrow areas on a line extending from Judique to Margaree on the western shore of Cape Breton island in the county of Inverness. These areas of productive measures form parts of the rim of a basin, the greater portion of which has been removed by erosion. Seams of coal of workable size have been found at Port Hood, Mabou, Inverness or Broad Cove and Chimney Corner.

At Port Hood the strata run parallel to the shore for about two miles. One seam about 7 feet thick is operated. Considerable work on this seam was done thirty five years ago, but the mine was closed in 1878 and resumed on a large scale in 1899.

At Mabou a small coal field shows several seams of good thickness which outcrop there. At Inverness or Broad Cove, north of Cape Mabou is a coal area in which outcrop several seams ranging in thickness from two to twelve feet. The dip is seaward at an angle of about

twelve degrees. At Chimney Corner Mines other workable seams COAL occur.

Nova Scotia.

Work on some of the coal areas in this field was carried on as far back as 1866, and in places the operations were on a large scale, but subsequently very little development was done until three years ago. A great drawback to the development of these areas, was the lack of shipping facilities ; the coast does not offer suitable harbours. In 1900 however, a line of railway was completed from Inverness or Broad Cove to Port Hastings, and was subsequently continued to Point Tupper on the Intercolonial. This gives the field a connection with the railway system of the continent ; operations on a large scale have been resumed. There are at present three companies at work.

Inverness Railway and Coal Company, Limited.--This company, formerly called the Inverness and Richmond Railway Company, owns coal areas at Inverness or Broad Cove, Port Hood, Chimney Corner and Margaree Island. Its most extensive operations are at Inverness on a seven foot seam, with a dip of one in seven. The company has a shipping pier at Port Hastings.

Coal produced in 1902, 42,934 tons.

Port Hood Coal Company.--This company incorporated in 1899, operates a colliery at Port Hood on a seven feet seam. Worked by a slope 1,150 feet.

Persons employed in 1902, 92.

Coal produced 38,659 tons.

Mabou Coal Company.--Operates at Mabou, where work, mostly of a development nature, is proceeding on three seams of 7, 8 and 13 feet respectively.

A railway about 6 miles long is projected, connecting the mine with a shipping place at Mabou Harbour.

Richmond Field.

In the south-western portion of Richmond county, coal occurs in several localities.

Extensive explorations have been carried on in this field, and coal has been discovered at Coal Brook, Caribacou, Little River and Sea Coal Bay. Although comparatively large sums were spent between 1863 and 1878, also in 1900 and 1902 on exploration work, very little systematic mining has been done.

COAL.

Nova Scotia.

Coal Brook.—At this place some exploration and drilling were done in 1902. A bore-hole was put down to a depth of 520 feet on the north bank of Coal brook, near the proved outcrop of a seam. The drill was then moved 800 feet to the west, down stream, and a second boring struck coal 1 foot 8 inches thick at a depth of 170 feet. The hole was continued to 1,020 feet but did not strike any other seam of importance. The details of the boring are given in the report of the Department of Mines of Nova Scotia for 1902, and in the Summary Report of the Geological Survey for the year 1902.

Sea Coal Bay.—Here a seam of a thickness of about 11 feet gave, on analysis, such a large proportion of ash as to show it to be of very little use for ordinary purposes.

In his report on this coal field, Mr. Hugh Fletcher, of the Geological Survey, gives a summary of his own observations and of information gathered from various sources. Rep. of Progress, Geol. Survey, 1879-1880.

Pictou Coal Field.

This field, situated almost in the centre of Pictou county, has an area of about 25 square miles. It is 11 miles long, with a maximum width of 3 miles between New Glasgow on the north and Stellarton on the south. The field is therefore small, but the seams are of great size, two being nearly forty feet in thickness.

The district is of a remarkably intricate structure, being cut up by numerous faults of various magnitude, and the productive measures are almost completely surrounded by a girdle of faults. The field is very well situated for railway communication, which advantage, however, is somewhat offset by the physical difficulties encountered due to faulting. It has also been noticed that the seams change their character to a remarkable degree within short distances. The field was opened in 1798, but the first systematic work was contemporary with the development of the Cape Breton field in 1827, when both became the property of the General Mining Association.

The Pictou field is conveniently divided into three districts, viz.:—the Central or Albion, the Western or Westville, and the Eastern or Vale.

In the Albion, four seams have been worked. They are the Main, 38 feet thick, the Deep, 22 to 38 feet, the Third, 10 to 13 feet, and the McGregor, 13 to 20 feet. The measures containing these seams rest conformably on the Millstone Grit. The dip of the coal-bearing

measures varies from the horizontal to over 30 degrees. Several other COAL seams have been reported in this section, but none of them of workable Nova Scotia size.

The Westville section is separated from the Albion section by a downthrow fault, estimated at 2,600 feet. The seams of this section are believed to be equivalent to those of the Albion section. The variation in dip and change of character in short distances are similar in both sections.

The Vale section is in the form of a syncline with east-and-west axes. The thicker and more valuable seams appear in the southern outcrop, where they are worked. Two seams of this section, viz., the McBean and the Six Feet have been extensively worked.

The collieries in operation in the Pictou field are as follows :—

Acadia Colliery.—Operated by the Acadia Coal Company. It is situated at Westville, three miles from Stellarton.

Seam worked 10 feet, dip 27°.

Opened by main slope, over 4,000 feet.

Safety lamps used exclusively.

Albion Colliery.—Operated by the Acadia Coal Company. Situated at Stellarton on the Intercolonial Railway. This important colliery taps four seams, by shafts and long slopes. Work is now carried on on the Third seam 10 to 13 feet, Deep seam over 20 feet, and McGregor 13 to 20 feet.

Safety lamps are used in this colliery.

Vale Colliery.—Operated by the Acadia Coal Company. This colliery is on a six feet seam which is worked on both slopes of a basin ; the dip has an average of 15°. Slope 2,800 feet. This mine was worked with open lights until a couple of years ago, when the management, as a measure of precaution, introduced the use of safety lamps.

The Acadia Coal Company in 1902, produced from the three collieries which it controls about 324,800 tons of coal, giving employment to 835 persons.

Drummond Colliery.—Worked by the Intercolonial Coal Mining Company. Three seams are tapped in this colliery. The Main, 17 feet ; second seam 12 feet and the third seam $8\frac{1}{2}$ feet. The coal produced in 1902 was nearly 231,840 tons. Persons employed 665.

Marsh Colliery.—Operated by the Nova Scotia Steel and Coal Co. This company has held this property for a number of years past, but

COAL.
Nova Scotia. only began actual work on it in 1901. It is situated between New Glasgow and Thorburn on the George McKay or Four Feet seam. Worked by slopes now 1,575 feet long. The coal is shipped to New Glasgow by the Vale Colliery railway and thence to Trenton by the Intercolonial railway. This colliery in 1902 produced 25,488 tons of coal, and employed 95 men.

Cumberland Field.

This is the most westerly of the coal districts of Nova Scotia, a part of it being adjacent to Chignecto Bay.

In this field there are two coal-producing areas, both in Cumberland county. One situated near the coast, may be called the Joggins area, and the other situated about 15 miles to the east of the first at Springhill. The equivalence of the seams in these two basins has not yet been determined. These two coal-bearing areas are separated by a development of Permian strata, and this intervening space is affected by several faults. The coal measures of the Joggins area form a narrow strip some eighteen miles long.

In the Joggins area the following seams of workable size are known : At Joggins two seams, respectively 4 and 6 feet ; at River Hebert one 5 feet seam with two shale partings ; at Maccan two seams, the upper $2\frac{1}{2}$ and lower $4\frac{1}{2}$ feet ; at Chignecto, a seam $9\frac{1}{2}$ feet, of which $2\frac{1}{2}$ feet are shale partings ; at the Styles mine a seam 7 feet 8 inches with a S.W. dip of 40° .

At Springhill three seams are at present worked ; in Mr. Scott Barlow's reports these three seams are called in descending order : the North or Thirteen feet seam, the East seam, and the West eleven feet, or Black seam. By the courtesy of Mr. J. R. Cowans, the General Manager of the Springhill Collieries, which are operated by the Cumberland Railway and Coal Co., the following section was furnished to the Mines Section of the Geological Survey, through Mr. Hugh Fletcher. The section gives the stratigraphical succession at the Springhill mines as revealed by the mine workings up to 1903. Mr. Fletcher gives the following information in regard to it :—

"This section is original. . . . The upper portion is compiled from a horizontal tunnel 502 feet long, between No. 3 and No. 1 seams and a other 250 feet long, between No. 1 and No. 2. The remainder is from a tunnel cut across the strata underlying No. 2 seam for 1,122 feet, from the 2,600 ft. level of No. 2. The dip varies from 30° to 38° ."

Section of Coal Measures at Springhill mines, N.S.,
in descending order.

| | | Feet. | Inches. | COAL. Nova Scotia. |
|----|----------------------------------------------------------------|-------|---------|-----------------------|
| 1 | Coal, North or No. 3 seam..... | 9 | 0 | |
| 2 | Strata..... | 238 | 0 | |
| 3 | Coal, East or No. 1 seam..... | 10 | 0 | |
| 4 | Strata..... | 118 | 0 | |
| 5 | Coal, West or No. 2 seam..... | 10 | 0 | |
| 6 | Strata..... | 45 | 5 | |
| 7 | { Coal 0 1 Stone 0 8 Coal 2 0 Stone 0 2 Coal 0 3 } | 3 | 2 | |
| 8 | Strata..... | 44 | 6 | |
| 9 | { Coal 0 9 Stone 0 3 Coal 1 10 } | 2 | 10 | |
| 10 | Strata..... | 5 | 4 | |
| 11 | Coal..... | 0 | 11 | |
| 12 | Strata..... | 85 | 10 | |
| 13 | Coal..... | 2 | 2 | |
| 14 | Strata..... | 29 | 2 | |
| 15 | Coaly shale..... | 0 | 2 | |
| 16 | Strata..... | 37 | 7 | |
| 17 | Coaly shale..... | 0 | 2 | |
| 18 | Strata..... | 7 | 8 | |
| 19 | Coal..... | 2 | 1 | |
| 20 | Strata..... | 27 | 11 | |
| 21 | Coal..... | 1 | 7 | |
| 22 | Strata..... | 39 | 4 | |
| 23 | Coaly shale and coal..... | 0 | 6 | |
| 24 | Strata..... | 25 | 5 | |
| 25 | Coal..... | 0 | 6 | |
| 26 | Strata..... | 42 | 4 | |
| 27 | { Coal 0 11 Stone 0 3 Coal 1 5 } | 2 | 7 | |
| 28 | Strata..... | 10 | 7 | |
| 29 | { Coal 0 3 Stone 0 7 Coal 2 0 } | 2 | 10 | |
| 30 | Strata..... | 11 | 4 | |
| 31 | Coal..... | 0 | 4 | |
| 32 | Strata..... | 3 | 10 | |
| 33 | Coal..... | 0 | 3 | |
| 34 | Strata..... | 20 | 1 | |
| 35 | Coal..... | 1 | 0 | |
| 36 | Strata..... | 11 | 2 | |
| 37 | Coal and coaly shale and stone..... | 1 | 1 | |
| | COAL— $3\frac{1}{2}$ | | | |

| COAL. | | Feet. | Inches. |
|--------------|-------------------------------------------------------------------|-------|---------|
| Nova Scotia. | 38 Strata..... | 8 | 10 |
| | 39 Coal..... | 0 | 4 |
| | 40 Strata..... | 28 | 5 |
| | " | | |
| | 41 { Coal 0 3 Stone 0 2 Coal 0 6 } | 0 | 11 |
| | 42 Strata..... | 25 | 0 |
| | " | | |
| | 43 { Coal 0 0½ Stone 1 7 Coal 0 1 Coaly shale 0 5 } | 2 | 1½ |
| | 44 Strata..... | 35 | 0 |
| | " | | |
| | 45 { Coaly shale 0 2 Coal 0 2 Coaly shale 0 2 Coal 2 6 } | 3 | 0 |
| | 46 Strata to face of tunnel. | 5 | 8 |
| | Total thickness..... | 963 | 11½ |

Joggins Mines.—Operated by the Canada Coal and Railway Company. This colliery is situated one mile from the shore of Chignecto Bay. It is connected with the Joggins wharf by a tramway. The nearest railway station is Maccan on the Intercolonial, distant eleven miles, with which it is connected by a standard gauge railway.

Seam worked 4 to $5\frac{1}{2}$ feet thick, dip 17° , on which are two slopes, 2,500 and 2,700 feet; only one of these is at present in operation. Underground haulage by tailrope system. Coal produced in 1902, 64,960 tons, giving employment to 276 persons. Besides this comparatively large producing colliery, there are scattered throughout this area, smaller mines in operation. In 1902 there are records of four such mines having produced a certain amount of coal. These are the Chignecto Mine which produced 2,512 tons, the Strathcona, 2,352 tons, the Jubilee 1,543, the Scotia about 500 tons; besides these, there are others which have been opened and worked for some time.

Springhill Collieries.—Worked by the Cumberland Railway and Coal Co. On three seams 10 feet wide, dip 30° . Worked by slopes. This colliery is connected with the Intercolonial Railway by a branch 5 miles long, and by an extension 25 miles long with Parrsboro' on the Bay of Fundy, from whence shipments by vessels are made.

This colliery, the most important of the Cumberland field, is well equipped and the surface plant is very complete.—The coal is specially

well adapted for steam purposes, and the produce of the mine is largely COAL used by the Intercolonial, Canadian Pacific and Grand Trunk rail-ways. Nova Scotia.

Coal produced in 1902, 538,720 tons. Men employed 1,537.

NEW BRUNSWICK.

New
Brunswick.

The discovery of coal in the Province of New Brunswick dates back to 1782.—The most important, and so far, the only field of economic value in this province being that situated at the head of Grand lake, Queens county. This deposit has been worked to a limited extent since 1825. Rocks of Carboniferous age have been recognized over a great part of New Brunswick, but according to the conclusions arrived at by investigation and studies the coal seams occurring in them do not belong to the productive measures corresponding to those of Nova Scotia ; and the conditions under which the known coal occurs in New Brunswick are not very favourable for mining on a large scale. Hopes were entertained that south of the Coastal Range the features more closely resembled those of the Nova Scotia coal basins. Deep borings were undertaken at different places, but the results obtained do not seem to be encouraging, for no workable coal-seams were encountered. Therefore, the coal-bearing measures of the province are limited to the Grand Lake field. The area of this field seems to be about 100 square miles. The quality of the coal is excellent but the seams are thin, from 15 to 20 inches. The total quantity of coal underlying this district has been estimated at from 100 to 150 million tons.

Although mining operations were begun more than fifty years ago, they are yet conducted in a small way, and the proximity of the Nova Scotia fields, as well as the limited thickness of the seams would hardly justify the expenditure necessary for exploitation on a large scale. The beds are flat, lying with a cover varying from 2 to 30 feet, rendering it possible in many places to work them opencast. This enables small seams to be worked profitably for the local market, when the stripping does not exceed 8 feet. Beyond this depth it would be more advantageous to work under ground.

MANITOBA AND NORTH WEST TERRITORIES.

Manitoba and
North-west
Territories.

In Manitoba and the North West Territories the coal measures occur in the Cretaceous system or in the Laramie, which may be regarded as its upward continuation. The coal is therefore of more recent age than that of the Atlantic Coast. The quality of the fuel grades from lignite or brown coal as that found in Southwestern Manitoba, to anthracite in the Rocky Mountains. These various grades of coal are

COAL.

Manitoba and
North-west
Territories.

found in measures of nearly the same geological age, the differences depending on the amount of alteration and disturbance undergone by the rocks. Therefore, as might be expected, the quality of the fuel improves as the Rocky mountains are approached. The Souris river country and eastern Assiniboia yield only lignites, whereas in western Alberta the character changes to lignite coal, becoming more and more bituminous as the Foot Hills are reached and in the outer range of the Rocky mountains, steam coal and anthracite are produced.

It is roughly estimated that the coal-bearing region of the North West Territory, between the international boundary and the 56th degree of latitude, has an area of some 65,000 square miles, and although the fossil fuel of the greater part of this is lignite, which is not so valuable as the true coals, yet such deposits possess great importance as sources of supply of fuel for the adjacent farming communities.

Several separate coal-bearing districts or basins have been recognized throughout the region, and in the majority of these, some work has been done, either of a prospecting nature or for local wants, while in some places, coal seams are systematically worked and extensive well-equipped collieries are in operation.

Souris River and Turtle Mountain Fields.—The Souris district is situated in the south-eastern part of Assiniboia and is underlain by several seams of lignite which constitute an almost inexhaustible supply. The use of this fuel in the districts remote from the sources of supply of better grades of coal, is extending rapidly, and the Souris lignite is now used for the generation of steam.

In the vicinity of Estevan, three seams are recognizable over a great part of the region. The upper is four feet thick and is the most constant. The middle is very variable in thickness, reaching in places a maximum of 6 feet. The lower is more strictly speaking a series of seams separated by partings of clay. The quality of the lignite of this last seam is superior to that of the upper one.

Roche Percée and Coalfields mines.—Operated by the Souris Coal Mining Co. This company owns sections 3, 4 and 5, tp. II, range VI, and sections 32, 33 and 34 tp. I, range VI. The seam is about 8 feet worked by adit on the banks of the Souris river. This mode of working presents the objection of considerable upgrade haul to reach the prairie level, and it is probable that work by shaft from the prairie level would decrease the cost of haulage. The mines are well equipped, having air compressors, coal-cutting machines, etc. They are equipped for an output 600 tons a day.

The Turtle Mountain Field is in the south-western part of the province of Manitoba and is separated from the Souris field by a synclinal in which no coal has been recognized as yet. Several coal seams were found on the northern flank of Turtle Mountain, a number of years ago, but so far have not given rise to very active mining operations. There are only small workings to supply local wants.

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Belly River Coal Fields.

This coal-bearing region is situated in the southern part of Alberta. According to the results of Dr. Dawson's explorations in that region the outcrop of the seams which occur on the Belly river have been traced northwestward as far as the Red Deer river and southwestward to the 49th parallel, a distance of about 150 miles. The thickness and quality of the seams vary greatly, but on the Belly river and on the lower part of the St. Mary, a length of outcrop of 18 miles may be considered as workable. A list of the principal localities of the region, where natural outcrops of coal and lignite were observed, was published in the report of the Geological Survey for 1882-83-84, Part C.

Outcrops of coal are worked in numerous places, but in the majority of cases to supply only local demand. In Lethbridge, however, on the branch of the Canadian Pacific railway, an important colliery is in operation.

Lethbridge Colliery.—Operated by the Alberta Railway and Coal Company. Seam worked $5\frac{1}{2}$ feet, with a fire-clay parting of 2 to 6 inches. System of working, room and pillar, with coal-cutting machines and endless rope haulage. The mine is equipped for a production of 1,000 tons a day, but it is not worked to its full capacity. The company owns 66 miles of railway, from Lethbridge to Coutts, Alberta.

Cascade Basin.

This is part of the Bow River valley, which is underlain by Cretaceous coal-bearing rocks. It forms a basin or trough running approximately from the northern part of the Kananaskis range, south of latitude 51° , longitude 115° , in a northwesterly direction. Its total area is some 60 square miles. This area, although small, contains much coal. The rocks here have been greatly disturbed; in places the seams assume an almost vertical attitude. Most of the coal is bituminous, although some of the seams have been locally converted to anthracite.

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At Marsh's mine, near the south end of the field, are two seams, one of about 15 feet and the other eight feet. Three miles to the north-west of this are several openings into beds of workable size. At Canmore there are three seams of 4 feet, 12 feet and 16 feet, respectively. At Anthracite three seams are now being worked, two of a thickness of 4 feet each and one of 3 feet. All of these seams are situated very near the main line of the Canadian Pacific railway.

The measures in this field are often faulted, and the seams dip to the south-west at an inclination varying from 15 to 60 degrees. At Canmore two of the seams are almost vertical. The field was first opened by the Canadian Anthracite Coal Company in 1886 at Canmore and Anthracite.

Canmore Colliery.—This colliery is worked by the H. W. McNeil Company. The four seams worked vary considerably in thickness from 3 to 6 feet; worked by shaft and room and stall method. The product of the mine is a good bituminous coal.

Anthracite Colliery.—Operated by the H. W. McNeil Company. There are three seams worked which produce anthracite coal. The mine has an output of 100 tons a day. Both the Anthracite and the Canmore collieries are situated on the main line of the Canadian Pacific railway.

In the district around Edmonton there are several small mines operating, supplying the needs of Edmonton itself and the villages and market centres of that region. This industry, however, will certainly grow as the district becomes more thickly settled, and may in time assume great importance.

Blairmore-Frank Coal Fields.

This coal-bearing area is situated on the eastern slope of the main range of the Rocky Mountains and extends in width from Crow's Nest lake for a distance eastward of fourteen miles. Its southern limit would be almost latitude $49^{\circ} 20'$ and its northern boundary has not been determined.

In this field a section of the coal measures observed at Cat Mountain gave some 740 feet in which there are present 21 seams of an aggregate thickness of 125 feet 3 inches. Until 1900 very little work had been done in this field, but within the last three years its development has been very active.

Frank Colliery.—This is operated by the Canadian American Coal and Coke Company. It is located on the east flank of Turtle mountain.

Seam worked nine to twelve feet, dip 83° west. Worked by a main entry COAL. run in some 4,500 feet. Output about 500 tons a day, to be increased shortly. The coal produced is an excellent steam coal, though high in ash.

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Lille Collieries.—Operated by the United Gold Fields of British Columbia. The mine is situated on Gold Creek, three and a half miles above the town of Frank. A railway line connects it with the Crow's Nest branch of the Canadian Pacific railway.

Recently another important colliery has been added to these two. It is operated by the International Coal and Coke Company, Blairmore, and is said to be shipping coal, but no particulars are at hand.

Besides these collieries, a great deal of prospecting work has been done in the region, and from all appearances this coal-field will probably grow in importance and become a great factor in the question of the fuel supply of the mining districts and the smelting centres of British Columbia and adjacent parts of the United States.

BRITISH COLUMBIA.

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Columbia.

In western Canada coal occurs in connection with newer rocks than in the east. Although Carboniferous rocks of great thickness are frequently met in the west, they are all marine deposits, mainly limestones. Ancient swamps and marshes which afforded the conditions giving rise to accumulation of vegetable matter, producing coal beds, existed in the Cretaceous and Tertiary times. In character, the coals of British Columbia range from anthracite to lignite, showing that the grade depends on conditions of metamorphism rather than on age.

Four recognized coal-fields in British Columbia may be named, but mineral fuels are known in many other places, which have only to be worked in order to receive recognition.

The Crow's Nest Pass Field.

The Nanaimo Field.

The Comox Field.

The Queen Charlotte Islands Field.

Crow's Nest Pass Field.

This field is situated immediately west of the summit of the Rocky Mountains, which form the boundary between Alberta and the province of British Columbia. It has a length north and south of

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about thirty five miles and a maximum width of thirteen miles. An east and west line passing through the town of Fernie, divides it into two almost equal parts. On the west it is bounded by the Elk river, and on the east by the main ridge of the Rockies. About 230 square miles are underlain by the coal measures. Coal was discovered in this district many years ago and the first allusion to its existence in the Reports of the Geological Survey dates back to 1883, when Dr. G. M. Dawson approximately examined and defined the field in a preliminary way; however, it was only on the construction of the Crow's Nest Branch of the Canadian Pacific railway, a few years ago, that it became important from an economic standpoint.

The coal occurs in the Cretaceous rocks; it is bituminous in character, and cokes well. Some of the upper seams are said to partake of the character of cannel coal. In a section of the coal measures of this area, in a thickness of 4,700 feet, over 215 feet of coal were observed in beds of from one foot to forty six feet. Of these, at least one hundred feet would be workable, and on this assumption, some 22,600,000,000 tons would be available over the total area of 230 square miles.

There are at present three collieries in this field, working and producing actively. They are all operated by the Crow's Nest Pass Coal Company.

Coal Creek Collieries.—The Crow's Nest Pass Coal Co. was incorporated in 1897 and has operated these collieries since that time. The workings are situated on Coal Creek, about five miles from its mouth. Seams worked, 10 feet, 6 feet and part of a 36 feet seam. They are entered by tunnels. The mine is connected with the Canadian Pacific railway by a spur from the town of Fernie. At this place there are at present over 400 coke ovens of the bee-hive pattern, in operation. Production of this mine in 1902, 267,429 tons, of which about one-half was used in the production of coke.

Michel Colliery.—These workings are situated on the Crow's Nest branch of the Canadian Pacific railway. Work has been done on eight seams which outcrop here, but at present there are three mines in operation and producing, while the others are being developed. There are 200 coke ovens in operation, and 200 more under construction. Production of these collieries in 1902, 117,515 tons, of which 50,000 were converted into coke.

Morrissey Colliery.—Situated on Morrissey creek, about four miles from the Canadian Pacific railway. The colliery is connected with

the Great Northern railway by a branch from Jennings, Montana. COAL. Four mines are in operation at Morrissey, and a bank of 200 coke ovens is under construction. Production for 1902, 46,291 tons, to be increased greatly in a near future.

To the north of the Crow's Nest Pass field, in the Elk river trough of Cretaceous rocks, is another development of coal-bearing rocks which has lately attracted some attention. This coal area lies between the Elk river and its tributary Fording river; its southern limit is some twenty-four miles north of the mouth of Michel creek, and the coal-bearing rocks extend northward. In a section of these measures, twelve seams were encountered, aggregating a total thickness of nearly ninety feet of coal. There are at present no means of communication beyond the rough trail along the Elk river, but the construction of a railway to reach this area would not offer any great difficulties. Several extensive concessions have been taken up.

West Kootenay, Kamloops.

In the Kamloops district of the West Kootenay, there are several occurrences of coal and lignite in rocks of Tertiary age. The most important of these known outcrops is on the Nicola river, near the Coldwater river. A list of coal outcrops in this district was given in Dr. G. M. Dawson's report on the Kamloops map sheet, Geological Survey Report, part B, vol. VII, 1894. In his report for 1901 the Provincial Mineralogist for British Columbia mentions that work is going on in this basin, but detailed information is not available.

North Fork, Kettle River.

The following extract from the Summary Report of the Geological Survey for 1901 is interesting as mentioning a new discovery of coal in the West Kootenay District.

"The new coal fields, as they are locally called, are situated about twenty-four miles above the forks of the East Branch on the Main North Fork of the Kettle river, or about fifty-two miles from Grand Forks. Here, as above mentioned, a tertiary outlier rests on the granite The extent of coal-bearing rocks is not large, as they are overlaid by the unproductive volcanic flows and immediately underlaid by granite which is exposed on the east bank for the greater part of the distance between the two exposures of coal. Nor have they a wide areal extension, as the granite boulders in the river and tributary creeks testify.

"Colonel N. E. Linsley, of Spokane, who examined the district after my visit, reports having discovered four seams of coal on the lower (Gilpin's) claim. Of these the upper (seven inches wide) was the largest and was separated from the lowest by 150 feet of tuffs. He also found the area of coal-bearing rocks to be extremely circumscribed. The coal is of very fair quality, coking easily and well."

Nanaimo Coal Field.

This field is situated on the Island of Vancouver, towards its south-eastern part. Its area has been estimated at about 200 square miles. Two seams, at least, of workable thickness are known, but the measures being much folded and cut up by faults, it is very difficult to correlate the beds in the various parts of the field.

The product of both this and the Comox areas is largely exported to California, where it competes successfully with the coals produced in the United States, notwithstanding that it is handicapped by an import duty.

Nanaimo Collieries.—Operated by the Western Fuel Company, which took over the properties of the New Vancouver Coal Mining Co. This latter had been formed in 1862 and reorganized in 1889. Its output is the largest of the coal companies operating in Vancouver island. Figures of production for 1902 are not available, but in 1901, the output amounted to 584,826 tons. The collieries consist of the following workings.

Northfield Colliery.—Situated four miles from Departure bay. Seam worked 2 to $3\frac{1}{2}$ feet thick; dip, 6 degrees; worked by shaft 440 feet deep, and slope at bottom 2,100 feet. System of working, long-wall. This colliery is at present idle.

No. 1, Shaft, Esplanade.—Situated half a mile from the wharfs of Nanaimo harbour.

Seam worked, the 'Harbour'; thickness, 5 to 12 feet; dip, 6 degrees. System of working, pillar and stall.

Haulage. For haulage from the levels, which are in about 2 miles from the foot of the shaft, the company uses electric motors.

Ventilation by Guibal fan, 36 feet in diameter and 12 feet wide. Connected with the Protection island shaft which is used as intake.

Lamps, naked lights.

The workings of this extensive colliery are under the waters of Nanaimo harbour and beneath the surface of Protection island. The

mine is quite safe from invasion by water, being protected by a thick- COAL. ness of rock and earth varying from 400 to 1,200 feet between the British workings and the bed of the harbour. The pillars left in place amount Columbia. to two-thirds of the original seam, this large proportion being thought necessary to insure safety. They will be robbed at a later period.

Protection Island Shaft.—Situated 300 yards from the shipping wharf and half a mile from Nanaimo.

Seams worked, the 'Douglass,' upper and lower. Thickness of upper seam 6 to 8 feet; dip 6 degrees, vertical depth of shaft to seam 670 feet. The lower seam is reached at a depth of 740 feet and is 4 feet thick.

In the upper seam two slopes have been driven, 900 and 600 yards respectively.

System of working, pillar and stall.

The Protection Island shaft is the intake of the system of ventilation which includes Esplanade shaft.

Southfield Colliery.—No. 5. Situated five miles from Nanaimo in the southern part of the area controlled by the Western Fuel Co.

Seam worked varies from 6 to 12 feet in thickness. Dip 6 degrees. Vertical depth of shaft 508 feet.

System of working, pillar and stall.

This part of the field is very much cut up by faults and breaks.

Harewood Mine.—This mine is situated about three miles and a half south-west of Nanaimo. This was worked actively some 25 years ago, and subsequently acquired by the New Vancouver Coal and Land Co. which left it idle for some time. In 1901 work was resumed at this place and the mine produced for a couple of years. The main workings are the Harewood slope on a six foot seam and a shaft which are now connected. Work however, was discontinued in September 1902.

Wellington Colliery, Cranberry District.—Operated by the Wellington Colliery Co.—The colliery is an important producer. The workings consist of No. 1 slope, No. 3 slope, and the Tunnel. The main equipment of the colliery consists of five miles of railway, four locomotives, 350 coal cars, stationary engines, electric power house, &c. The company has wharves and bunkers at Ladysmith, Oyster Harbour. The mining is carried on by pillar and stall. No figures of production are available for 1902, but in 1901 the output of the mine was 405,986 tons.

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Alexandria Colliery.—This is situated in South Nanaimo district and is operated by the Wellington Colliery Co. Worked by a slope. The colliery is connected by a short railway line with the E. and N. railway. In 1901 the output of the mine was 68,420 tons. In 1902 no work was carried on, the colliery being allowed to remain idle all year. The Wellington Colliery Co. whose offices are at Victoria employ a staff for prospecting in this and other districts.

Comox Field.

This field is situated on the north-west of the Nanaimo field, from which it is separated by the intervention of crystalline rocks. The Comox area has probably a greater extent of productive measures than the Nanaimo field. Mr. Richardson, late of the Geological Survey, estimated it at 300 square miles, without taking into consideration the seaward extension.

In a section on Brown River, almost the entire thickness of the productive measures is exposed, amounting to 740 feet. In this section nine seams occur, with an aggregate thickness of $16\frac{1}{4}$ feet. At the Union mines a section of 122 feet reveals ten seams aggregating $29\frac{1}{4}$ feet, the thickest being 10 feet.

Wellington Colliery, Cumberland Town, Comox District.—This mine was formerly designated by the name of Union Mines. It is worked by the Wellington Colliery Co., which also operates two other mines in the Nanaimo field. The main workings consist of one slope and two shafts, worked partly by pillar and stall and partly by longwall. Seams worked, three feet and five feet respectively. The surface plan consists mainly of nearly 12 miles of standard gauge railway to shipping wharf; 4 locomotives; steam saw mill; coal washers; 200 beehive coke ovens at the mine, beside 70 at Union.

This company also carries on the manufacture of fire-bricks, from the fire-clay mined in connection with the extraction of the coal.

Queen Charlotte Island Field.

This field is in that part of the Cretaceous area of the province which extends over parts of Graham and Moresby Islands, on both sides of Skidegate Sound.

The coals are anthracite and bituminous, the former comparing favourably with that of Pennsylvania. In the 'Mineral Wealth of British Columbia' Dr. Dawson speaks of the Cowgitz seams on the Skidegate as follows:

'At Cowgitz, the Queen Charlotte Coal Mining Co. about 1871, COAL constructed a wharf, houses, tramway, &c., and attempted to work the British coal seams which have there the character of anthracite, but met with Columbia difficulties in following the seams, of which some portions were found to be in a crushed and pulverulent state.

'Though these efforts were not attended with success, the work was not carried far enough to prove that the coal in this vicinity is not of a workable character. Further exploration appears to be fully justified by what is known of the place * * * The beds containing the anthracite are almost vertical, and it is evidently on account of the disturbance and local alteration which it has suffered that the coal has passed into the condition of anthracite. The best seam found had a maximum thickness of a little over 6 feet, while a second outcrop showed 2 feet 5 inches.'

A bed 18 feet thick, of bituminous coal, has been reported on the Ya-Kum river, midway between Skidegate and the head of Masset inlet.

Means of communication with the coast, however, must be provided before this deposit can be utilized.

In 1892 Mr. H. E. Parrish, C.E. and M.E., late of the staff of the Geological Survey of Pennsylvania, examined some coal areas on this island for private parties. After mentioning and describing some prospecting work done at Camp Robertson, section 20, township 5 ; Camp Anthracite, section 17, township 5 ; Camp Wilson, section 36, township 9 ; he concludes with the following remarks :

* "With the knowledge I have of the coal regions of Pennsylvania, acquired there as a mining engineer and on the geological staff of that state, it must gratify you to know that in my judgment you have the best coal field I have seen. Until I visited it, I had no conception such a valuable field existed on the Pacific Coast. You possess a number of beds of unusual thickness, containing coals of superior quality, suitable for all requirements. You have anthracite, first class steam, gas and coking coals, and a bed, over 15 feet thick, excellent for domestic purposes."

Peace River region.

Of the other localities in British Columbia where coal has been observed, the country in the Peace river region is likely to come into

* Report of H. E. Parrish, extracts of which were published in the Report of the Minister of Mines for British Columbia for 1898, p. 1163.

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prominence if the project now being discussed of the building of the Grand Trunk Pacific Railway becomes a fact. The line, as it is now projected, would follow part of the Peace river valley and would pass at a moderate distance from the cañon where Dr. Selwyn and Dr. Dawson observed outcrops of coal.

Dr. Selwyn in his report on the Peace river country in 1875, mentions four seams of good lignite coal, from six inches to two feet in thickness, as occurring on Peace river below the cañon.

As to the coal-bearing character of the country, Dr. Dawson expresses himself as follows : "It would thus appear that while in the region lying between the Athabasca and the Peace rivers, no coal-seams sufficiently thick to be of great economic value have yet been discovered, that coal and lignite of good quality occur in two distinct series of beds. Wherever natural sections of these occur in the valleys of rivers and streams, coal in greater or less quantity is found, and the persistently carboniferous character of the beds, thus abundantly proven. There can be little doubt that beds of a workable character exist in different parts of this district and will be found by further search."

"The promising coal-bearing belt of rocks supposed to belong to the lower sandstones and shales which run south-eastward from the cañon of the Mountain of Rocks to Table Mountain and the lower forks of Pine river, probably extends still further in the same direction, crossing the head-waters of the Wapiti and Smoky rivers above the points reached in my explorations, and forming the southwestern side of a synclinal in which the Upper sandstones and shales lie. In this the coals reported by the Indians to exist on the upper parts of these rivers may occur."

In support of these views, it is interesting to quote the following section measured recently by Mr. Hugh Campbell up a small creek on the Peace river cañon.*

| | Ft. In. | | Ft. In. |
|---------------------------------|---------|-----------------------------------|---------|
| Blue shale | 10 | Shale | 20 |
| Shale with hard bands | 6 | Limestone | 3 |
| Sandstones | 10 | Unseen strata | 50 |
| Gray shale | 8 | Fossiliferous sandstone | 30 |
| Impure cannel coal | 2 | Coal | 2 7 |
| Coal, good | 9 | Shale | 9 0 |
| Soft blue shale | 7 | Coal | 0 8 |
| Measures not seen | 50 | Calcareous shale | 12 |
| Limestone | 10 | Coal | 1 4 |
| Sandstone | 9 | Hard gray shale | 20 |

* From a private letter communicated by Dr. H. M. Ami.

| | Ft. In. | | Ft. In. | COAL. |
|-------------------------|---------|-----------------------|---------|-------------------|
| Soft shales..... | 20 | Dark shale..... | 10 | |
| Coal..... | 2 | Coal..... | 2 8 | British Columbia. |
| Shales with bands | 30 | Hard rock..... | 2 | |
| Sandstone..... | 10 | Soft dark shale | 2 6 | |
| Shale..... | 1 3 | Coal..... | 4 2 | |
| Cannel coal..... | 1 | Soft clay | 3 | |
| Shale. | 20 | Shale..... | 6 | |
| Coal..... | 3 10 | Limestone..... | 6 | |
| Sandstone..... | 3 | Coal..... | 3 | |
| Shale..... | 4 | Shale..... | 5 | |
| Sandstone | 20 | Coal..... | 2 6 | |
| Coal..... | 1 4 | Sandstone..... | 8 | |
| Sandstone | 10 | Shale with bands..... | 8 | |
| Shale..... | 5 | Sandstone..... | 6 | |
| Sandstone..... | 20 | Shale..... | 1 3 | |
| Limestone..... | 4 | Coal. | 3 | |
| Shale..... | 10 | Sand..... | 1 | |
| Hard bands..... | 50 | Coal..... | 3 | |
| Limestone..... | 4 | Dark soft shale | 2 | |
| Sandstone..... | 15 | | | |

The measures, according to Mr. Campbell, dip S. 30° E. at an angle of about 13° .

YUKON TERRITORY.

Yukon Territory.

Lignites and lignitic coals occur in the Tertiary rocks of the valleys of the Yukon river and of the Klondike river. On Coal creek, a branch of Rock creek, a tributary of the Klondike, a seam occurs in which a tunnel some 400 feet in length has been driven. These workings are situated about 20 miles from Dawson. The seam worked here consists of an upper part of 3 feet of hard lignite, and a lower part of 2 to 3 feet, separated by a layer of clay of about one foot. Outcrops of lignite also occur on Cliff creek, which enters the Yukon about 55 miles below Dawson. Between these two occurrences, other outcrops have been observed at intermediate points, and it has been estimated that this area underlaid by lignite exceeds 200 square miles.

On Cliff creek the lignite is worked very actively by the North American Trading and Transportation Company. The workings are situated on both banks of the creek, $1\frac{3}{4}$ miles from its mouth. The coal is shipped to Dawson for heating purposes and is also used by river steamers. The mine is connected with the shipping wharf by a narrow gauge railway.

COAL.
Analyses.

ANALYSES OF CANADIAN COALS.
SYDNEY FIELD, N.S.

| Seam of Mine. | Fast or Slow cooling. | Moisture. | Vol. Matter. | Fixed Carbon. | Ash. | Spec. Gravity. | Theor. Evap. | Power. | *Analyst. | +Reference. |
|----------------------------------|--------------------------|-----------|--------------|---------------|-------|----------------|--------------|--------|-----------|-------------|
| Hub seam..... | | p. c. | 29·10 | 65·50 | 4·50 | 3·29 | ..... | ..... | g | C |
| "..... | | | 28·62 | 68·14 | 3·24 | 2·29 | ..... | ..... | k | D |
| Block House seam..... | | s | 29·48 | 65·57 | 4·35 | 2·63 | 1·292 | 8·59 | a | A |
| "..... | | | 31·94 | 62·79 | 5·27 | 3·76 | ..... | 8·97 | k | D |
| Harbour seam..... | | s | 600 | 67·05 | 4·30 | 2·32 | 1·29 | 7·67 | a | B |
| "..... | | | 27·85 | 62·92 | 2·99 | 2·26 | ..... | 9·19 | k | D |
| Internat. Coll..... | | s | 34·09 | 62·92 | 2·01 | ·90 | ..... | 7·76 | a | C |
| Glace Bay..... | | | 30·21 | 67·78 | 5·60 | 4·03 | ..... | 9·31 | k | A |
| Victoria seam..... | | s | 28 | 37·96 | 54·84 | 2·84 | 1·29 | 9·27 | g | D |
| "..... | | | 28·61 | 67·61 | 3·50 | 2·84 | ..... | 8·02 | b | B |
| Sydney main..... | | s | 3·04 | 31·14 | 61·50 | 4·32 | 1·24 | 1·30 | 8·45 | c |
| "..... | | | 3·13 | 23·81 | 67·57 | 5·49 | ..... | 9·25 | ..... | A |
| Sydney Colliery..... | | s | 1·26 | 33·84 | 60·79 | 4·12 | 1·71 | 1·312 | 8·33 | B |
| "..... | | | 32·74 | 61·54 | 5·72 | 3·37 | ..... | 8·49 | k | D |
| McAulay seam, Gowrie mine..... | | | 36·25 | 58·05 | 5·70 | 2·34 | ..... | 7·97 | d | A |
| Gowrie Colliery..... | | s | 50 | 28·13 | 66·01 | 5·36 | 2·71 | 1·31 | 9·05 | B |
| Phelan seam, Caledonia Coll..... | | s | 92 | 28·63 | 64·02 | 6·43 | 1·11 | 1·33 | 8·78 | C |
| "..... | | | 33·00 | 57·37 | 9·63 | 1·72 | ..... | 7·88 | d | B |
| Reserve Coll..... | | | 32·00 | 63·93 | 2·95 | 1·33 | ..... | g | g | C |
| "..... | | | 37·26 | 58·39 | 4·35 | 2·06 | ..... | 8·02 | ..... | B |
| "..... | | | 36·26 | 58·39 | 4·35 | 2·47 | ..... | ..... | ..... | B |
| "..... | | | 34·50 | 59·50 | 6·00 | ..... | ..... | ..... | ..... | A |
| "..... | | | 34·21 | 59·73 | 5·54 | 1·25 | 1·28 | 8·19 | g | C |
| Dominion No. 1 Coll..... | | | 52 | 25·13 | 71·22 | 2·73 | 1·10 | ..... | ..... | B |

MINES SECTION

| C | D | A | D | A | D | A | A | A | B | A | B | A | B | B | B | B | g | k | a | c | a | r | r | a | k | b | k | 7.67 | |
|------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|--|
| Old Bridgeport | | | | | | | | | | | | | | | | | 7.88 | 2.17 | 7.88 | 8.42 | 8.07 | 9.07 | 8.53 | 8.70 | 8.03 | 9.10 | 8.51 | 8.02 | |
| " Clyde Coll | | | | | | | | | | | | | | | | | 64.33 | 61.39 | 3.25 | 3.07 | 1.35 | 1.29 | 1.38 | 1.29 | 1.21 | 1.21 | 1.21 | 1.21 | |
| Lingan seam | | | | | | | | | | | | | | | | | 31.81 | 32.82 | 34.61 | 30.03 | 28.00 | 26.26 | 27.97 | 26.4 | 2.41 | 1.21 | 1.21 | 1.21 | |
| " South Head seam | | | | | | | | | | | | | | | | | 63.86 | 3.09 | 1.33 | 2.17 | 1.29 | 1.29 | 1.38 | 1.29 | 1.29 | 1.29 | 1.29 | 1.29 | |
| Emery seam | | | | | | | | | | | | | | | | | 31.81 | 75 | 1.77 | 1.65 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | |
| Ross seam, Schooner Pond | | | | | | | | | | | | | | | | | 31.81 | 32.82 | 34.61 | 30.03 | 28.00 | 26.26 | 27.97 | 26.4 | 2.41 | 1.21 | 1.21 | 1.21 | |
| Collins seam | | | | | | | | | | | | | | | | | 63.86 | 3.09 | 1.33 | 2.17 | 1.29 | 1.29 | 1.38 | 1.29 | 1.29 | 1.29 | 1.29 | 1.29 | |
| Gardner seam | | | | | | | | | | | | | | | | | 31.81 | 75 | 1.77 | 1.65 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | |
| " Lorway seam | | | | | | | | | | | | | | | | | 31.81 | 32.82 | 34.61 | 30.03 | 28.00 | 26.26 | 27.97 | 26.4 | 2.41 | 1.21 | 1.21 | 1.21 | |
| Tracey seam | | | | | | | | | | | | | | | | | 31.81 | 75 | 1.77 | 1.65 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | |
| Fraser seam | | | | | | | | | | | | | | | | | 31.81 | 32.82 | 34.61 | 30.03 | 28.00 | 26.26 | 27.97 | 26.4 | 2.41 | 1.21 | 1.21 | 1.21 | |
| Carroll seam | | | | | | | | | | | | | | | | | 31.81 | 75 | 1.77 | 1.65 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | 1.98 | |
| Block House seam | | | | | | | | | | | | | | | | | 31.81 | 32.82 | 34.61 | 30.03 | 28.00 | 26.26 | 27.97 | 26.4 | 2.41 | 1.21 | 1.21 | 1.21 | |

INVERNESS FIELD, N.S.

| A | A | A | E | E | c |
|----------------------------------------------------------|-------|-------|-------|------|---|
| A | A | E | E | a | t |
| Chimney Corner..... | 26.39 | 57.70 | 7.72 | 7.61 | |
| Broad Cove, 7-foot seam..... | 20.17 | 70.41 | 5.40 | | |
| " 5-foot seam..... | 25.75 | 56.86 | 10.15 | 1.41 | |
| " 5-foot seam..... | 27.67 | 52.87 | 11.68 | | |
| Port Hood..... | 28.36 | 56.94 | 6.25 | | |
| " 7 foot seam..... | 29.82 | 61.93 | 5.73 | 6.54 | |
| Port Hood mines, face of slope depth of 1,150 feet,..... | 34.86 | 53.60 | 7.52 | | |
| face south level..... | 38.36 | 49.25 | 9.78 | | |
| " " face north | 38.48 | 50.39 | 8.66 | | |
| " " | 37.18 | 50.96 | 9.44 | | |
| F | S | S | S | S | |
| | S | S | S | S | |
| | | | | | |

REFERENCES.

- | | | | | |
|-------------------------------------------------|------------------------|-----------------------|----------------------------|---------------------------------|
| A. Mines and Minerals of Nova Scotia. | <i>a</i> Gilpin, E. | <i>d</i> Brown, R. | <i>k</i> Harrington, B. J. | <i>p</i> Richard and Buist. |
| B. Geological Survey of Canada, Annual Reports. | <i>b</i> Dawson, J. W. | <i>f</i> Hartley, E. | <i>l</i> N. Y., Gas Co. | <i>q</i> Poole, H. |
| C. Mining Manual. | <i>c</i> How, H. | <i>g</i> Mason, F. H. | <i>m</i> N. S. Steel Co. | <i>r</i> Royal School of Mines. |
| D. Transactions American Inst. Min. Eng. | | | | |
| E. Nova Scotia Institute of Science. | | | | |
| F. Nova Scotia Steel Co. | | | | |

Report of the Minister of Mines of
British Columbia, 1902.

Zotla Steel Co.

ANALYSTS

⁸ Manhattan Gas Co.
⁹ Geological Survey of Canada Laboratory.
¹⁰ British Columbia Assay Office.

COAL.
Analyses.

**COAL.
Analys**

COAL.
Analyses.

ANALYSES OF CANADIAN COALS—Continued.
RICHMOND FIELD, N.S.

| Seam or Mine. | Moisture. | Vol. Matter. | Fixed Carbon. | Sulphur. | Spec. Grav. | Theor. Evap. | Theor. Power. | *Analyst. | +Reference. |
|---------------------------------|-----------|----------------|----------------|----------|-------------|--------------|---------------|-----------|-------------|
| Sea Coal Bay, 11-foot seam..... | p.c. | p.c. | p.c. | p.c. | p.c. | 30·10 | 30·40 | b | b |
| Little River, 4-foot seam ..... | ..... | 25·20 30·25 | 44·70 56·40 | 13·25 | ..... | ..... | ..... | a | a |

PICTOU FIELD, N.S.

| | | | | | | | | | |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Main seam, average of 31 analyses (a) | ..... | 23·65 | 62·61 | 13·61 | ..... | ..... | ..... | ..... | ..... |
| " Ford pit..... | 1·48 | 24·28 | 66·50 | 7·74 | ..... | ..... | ..... | ..... | ..... |
| Albion Mines..... | 1·05 | 26·19 | 63·41 | 9·35 | 1·48 | 1·294 | 9·13 | b | B |
| Acadia Coal Co.—McGregor pit, slack..... | 1·50 | 26·80 | 58·00 | 13·70 | 1·73 | 1·31 | 8·68 | c | B |
| " " Ford pit..... | 1·50 | 25·90 | 54·30 | 18·30 | ..... | ..... | ..... | a | A |
| Acadia Colliery..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | m | F |
| Drummond Colliery—Top coal..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | m | F |
| " " Fall coal..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | m | B |
| 1st bench..... | 1·80 | 33·53 | 55·39 | 10·50 | ..... | ..... | ..... | ..... | ..... |
| " " 2nd " | 1·31 | 29·97 | 60·31 | 8·67 | ..... | ..... | ..... | d | B |
| " " 3rd " | 1·43 | 30·76 | 59·89 | 8·79 | ..... | ..... | ..... | d | B |
| Coarse bench..... | 1·58 | 32·81 | 37·16 | 31·03 | ..... | ..... | ..... | d | B |
| Deep seam..... | 1·75 | 20·34 | 68·50 | 10·41 | 9·45 | 1·330 | 9·39 | a | A |
| " " | 1·30 | 25·44 | 61·65 | 10·25 | 8·61 | 1·330 | 9·41 | d | B |
| McGregor seam | 2·54 | 20·46 | 68·50 | 8·50 | 1·69 | 1·345 | 9·03 | e | B |
| " " | 2·50 | 22·50 | 65·70 | 11·80 | ..... | ..... | ..... | ..... | ..... |
|  | ..... | 23·30 | 70·00 | 6·70 | ..... | ..... | ..... | ..... | B |

MINES SECTION

| | S | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Z |
|------------------------------------------|-------|-------|-------|-------|-------|-------|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Intercolonial Mine | 1·52 | 29·46 | 60·19 | 9·10 | 1·625 | 1·330 | 8·24 | | | | | | | | | | | | | | | | | | | |
| Montreal and Pictou Mines. | 4·40 | 24·95 | 61·07 | 9·58 | | | 8·39 | | | | | | | | | | | | | | | | | | | |
| " " McBean seam, east side of East River | 5·47 | 19·93 | 68·55 | 6·05 | | | 9·41 | | | | | | | | | | | | | | | | | | | |
| " " | 2·67 | 29·29 | 52·36 | 16·76 | | | | | | | | | | | | | | | | | | | | | | |
| " " | 2·67 | 28·65 | 49·66 | 19·42 | | | | | | | | | | | | | | | | | | | | | | |
| " " | 2·67 | 27·20 | 54·86 | 15·27 | | | | | | | | | | | | | | | | | | | | | | |
| " " | 1·94 | 23·95 | 57·17 | 16·94 | | | | | | | | | | | | | | | | | | | | | | |
| " " | ·86 | 20·95 | 64·95 | 13·24 | | | | | | | | | | | | | | | | | | | | | | |
| " " | 1·62 | 22·86 | 68·18 | 7·34 | | | | | | | | | | | | | | | | | | | | | | |
| " " | ·90 | 22·50 | 65·28 | 11·32 | | | | | | | | | | | | | | | | | | | | | | |
| " " | None. | 29·72 | 62·28 | 8·00 | | | | | | | | | | | | | | | | | | | | | | |
| " " | None. | 29·98 | 62·15 | 7·87 | | | | | | | | | | | | | | | | | | | | | | |
| " " | ·76 | 38·84 | 55·81 | 5·09 | | | | | | | | | | | | | | | | | | | | | | |
| " " | 1·22 | 22·96 | 65·61 | 10·21 | | | | | | | | | | | | | | | | | | | | | | |
| " " | ·57 | 19·24 | 72·76 | 7·43 | | | | | | | | | | | | | | | | | | | | | | |
| | S | 2·50 | 36·30 | 56·00 | 5·00 | | | | | | | | | | | | | | | | | | | | | |
| | S | 4·05 | 37·00 | 59·17 | 3·83 | | | | | | | | | | | | | | | | | | | | | |
| | S | 3·72 | 33·24 | 55·83 | 6·40 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·98 | 30·84 | 60·73 | 7·45 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·76 | 32·22 | 60·91 | 6·11 | | | | | | | | | | | | | | | | | | | | | |
| | S | 1·21 | 33·81 | 63·13 | 1·85 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·30 | 29·19 | 67·95 | 2·56 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·63 | 28·90 | 65·16 | 5·31 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·90 | 34·56 | 60·59 | 3·95 | | | | | | | | | | | | | | | | | | | | | |
| | S | 1·34 | 33·64 | 59·86 | 5·16 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·56 | 30·27 | 60·89 | 8·28 | | | | | | | | | | | | | | | | | | | | | |
| | S | ·41 | 28·54 | 63·63 | 7·42 | | | | | | | | | | | | | | | | | | | | | |

CUMBERLAND FIELD, N.S.

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|------|-------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Joggins | 2·50 | 36·30 | 56·00 | 5·00 | | | | | | | | | | | | | | | | | | | | | | |
| MacLean | ·405 | 37·00 | 59·17 | 3·83 | | | | | | | | | | | | | | | | | | | | | | |
| Styles | 3·72 | 33·24 | 52·15 | 10·89 | | | | | | | | | | | | | | | | | | | | | | |
| " Springhill—Main seam, 11 feet— | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Band No. 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| " No. 9 | | | | | | | | | | | | | | | | | | | | | | | | | | |

(a) Average of samples taken every foot across the section of the seam.

COAL.
Analyses.

ANALYSES OF CANADIAN COALS—*Continued.*
NORTH-WEST TERRITORIES.

| Locality. | LIGNITES. | | | | | | | | | | Reference. |
|-------------------------------------------------------------------------------------------|-----------|--------------|---------------|-------|----------|----------------|--------------|--------|-----------|---|------------|
| | Moisture. | Vol. Matter. | Fixed Carbon. | Asp. | Sulphur. | Spec. Gravity. | Theor. Evap. | Power. | *Analyst. | | |
| Souris River, 7 miles from Roche Percée, seam 6 feet. | 17.78 | 29.51 | 44.36 | 8.35 | 1.417 | 1.397 | 9.57 | t | t | B | |
| La Roche Percée, seam 5 feet. | 21.84 | 32.15 | 41.61 | 4.40 | 1.372 | 1.372 | 9.57 | t | t | B | |
| South Saskatchewan, 10 miles above Medicine Hat, seam 4 feet. | 16.82 | 29.54 | 46.34 | 7.30 | 1.417 | 1.397 | 9.57 | t | t | B | |
| South Saskatchewan, 7 miles from Medicine Hat. | 17.70 | 28.63 | 49.83 | 3.84 | 1.372 | 1.372 | 9.57 | t | t | B | |
| North Saskatchewan, 40 miles below confluence of Brazeau river, seam 18 to 20 feet. | 19.90 | 30.88 | 44.03 | 5.19 | 1.372 | 1.372 | 9.57 | t | t | B | |
| North Saskatchewan, below Fort Edmonton, seam 6 feet. | 14.78 | 28.46 | 58.69 | 6.07 | 1.434 | 1.434 | 9.84 | t | t | B | |
| " 1½ miles below ferry at Edmonton, Alta., seam 4 feet. | 12.89 | 32.19 | 52.17 | 2.75 | 1.426 | 1.426 | 9.69 | t | t | B | |
| Red Deer river, mouth of Arrowood, 6-foot seam. | 11.47 | 36.12 | 48.57 | 3.84 | 1.403 | 1.403 | 9.95 | t | t | B | |
| " 2 miles below Arrowood, 5 feet. | 13.08 | 31.49 | 51.35 | 4.08 | 1.393 | 1.393 | 9.95 | t | t | B | |
| " 7 miles above Hunter's Hill, 3½ feet. | 14.20 | 30.92 | 51.21 | 3.67 | 1.426 | 1.426 | 9.36 | t | t | B | |
| " 9 " | 13.06 | 29.41 | 48.51 | 9.02 | 1.422 | 1.422 | 9.36 | t | t | B | |
| " 13 " | 13.63 | 31.31 | 41.81 | 13.25 | 1.422 | 1.422 | 9.36 | t | t | B | |
| " 14 " | 12.62 | 32.08 | 46.72 | 8.58 | 1.422 | 1.422 | 9.36 | t | t | B | |
| Bow river, Grassy island, seam 4½ feet. | 7.66 | 25.90 | 34.53 | 31.91 | 1.416 | 1.416 | 10.19 | t | t | B | |
| Blackfoot crossing, 3 feet. | 11.90 | 31.90 | 50.97 | 5.97 | 1.397 | 1.397 | 10.29 | t | t | B | |
| " 4 miles below Blackfoot crossing. | 11.91 | 30.04 | 54.78 | 3.27 | 1.397 | 1.397 | 10.29 | t | t | B | |
| Crowfoot creek, seam 6 feet. | 10.72 | 29.26 | 46.09 | 13.93 | 1.397 | 1.397 | 10.29 | t | t | B | |
| Horseshoe Bend, seam 4½ feet. | 11.25 | 31.98 | 50.85 | 5.92 | 1.397 | 1.397 | 10.29 | t | t | B | |
| Crowfoot creek, 5 miles from Bow river, Sec. 7, Tp. 22, Range 20, west of 4th M., 9 feet. | 11.13 | 36.52 | 43.16 | 9.19 | 1.397 | 1.397 | 10.29 | t | t | B | |
| | F | 10.35 | 30.97 | 43.04 | 15.64 | | | | | | |

COAL.
Analyses.

| | | | | | | | | |
|-------------------------------------------------------------------------------------------------------------|---|------|-------|-------|-------|-------|-------|---|
| Belly river, 5 miles below Little Bow river..... | S | 9.18 | 30.66 | 53.31 | 6.85 | 1.398 | 10.84 | B |
| ' coal banks, seam $5\frac{1}{2}$ | S | 6.50 | 31.59 | 54.36 | 7.55 | 1.359 | 11.51 | B |
| St. Mary river, 7 miles above junction with Belly river..... | S | 7.02 | 29.41 | 57.28 | 6.29 | 1.369 | 11.72 | B |
| Yukon District, 7 miles up Coal creek, seam $12\frac{1}{2}$ feet..... | F | 7.24 | 41.45 | 48.91 | 2.40 | 1.369 | 11.72 | B |
| COALS. | | | | | | | | |
| Cascade river, $2\frac{3}{4}$ miles from confluence with Bow river, seam 20 inches..... | S | 2.07 | 15.84 | 74.35 | 7.74 | 1.427 | 14.62 | B |
| Cascade river, semi-anthracite, seam 3 feet 10 inches, $\frac{1}{4}$ mile from C.P.R. | F | 1.04 | 9.15 | 87.18 | 2.63 | 1.400 | 10.93 | B |
| Bow river, Coal creek seam $4\frac{1}{2}$ feet..... | S | 4.93 | 27.22 | 52.54 | 15.31 | 1.427 | 14.62 | B |
| Bow river Pass seam 4 feet..... | S | .71 | 10.58 | 81.14 | 7.57 | 1.427 | 14.62 | B |
| Coal creek, Bow river, Sec. 22, Tp. 27, R. 5, west of 5th M..... | F | 2.79 | 36.90 | 53.40 | 6.91 | 1.427 | 14.62 | B |
| Marsh's Mine, $\frac{1}{2}$ mile south of Bow river at Gap siding, 2 seams, 10 and 12 feet..... | F | .70 | 11.03 | 79.78 | 8.49 | 1.427 | 14.62 | B |
| Little Red Deer river, 11-foot seam ; foot-hills at base of main limestone range of Rocky mountains..... | F | 1.87 | 13.74 | 79.55 | 4.84 | 1.427 | 14.62 | B |
| Little Red Deer river, seam 4 feet..... | F | 1.52 | 11.65 | 81.16 | 5.67 | 1.427 | 14.62 | B |
| Sheep creek, Sec. 2, Tp. 20, R. 3, west of 5th M., 4-foot seam..... | F | 3.08 | 39.37 | 54.50 | 3.05 | 1.427 | 14.62 | B |
| Near Moose mountain, Sec. 8, Tp. 23, R. 6, west of 5th M., seam 5 feet..... | F | 2.74 | 18.62 | 75.52 | 3.12 | 1.427 | 14.62 | B |
| Head waters of Mill and Pincher creeks, Sec. 10, Tp. 5, R. 1, west of 5th M., seam 8 feet..... | S | 1.99 | 20.88 | 61.87 | 15.26 | 1.530 | 11.32 | B |
| Old Man river, north fork, 5 feet..... | S | 1.75 | 16.85 | 61.54 | 19.86 | 1.432 | 11.13 | B |
| " middle fork, 3 feet..... | S | 3.27 | 26.41 | 50.50 | 19.82 | 1.311 | 13.06 | B |
| " " 3 " | F | 2.36 | 32.07 | 56.37 | 9.20 | 1.311 | 13.06 | B |
| " south fork $9\frac{3}{4}$ " | F | 1.93 | 23.23 | 57.50 | 17.34 | 1.311 | 13.06 | B |
| Anthracite, Alberta Territory, H. W. McNeil & Co.— | | | | | | | | |
| 1st vein, raw..... | | 1.10 | 13.09 | 78.94 | 7.87 | 1.311 | 13.06 | F |
| " washed..... | | .39 | 14.82 | 79.98 | 4.84 | 1.311 | 13.06 | F |
| 2nd vein, raw..... | | .42 | 15.46 | 75.07 | 9.05 | 1.311 | 13.06 | F |
| " washed..... | | .40 | 6.02 | 89.40 | 4.18 | 1.311 | 13.06 | F |
| 3rd vein, raw | | .08 | 15.12 | 76.67 | 8.13 | 1.311 | 13.06 | F |
| " washed | | .07 | 15.30 | 79.46 | 5.17 | 1.311 | 13.06 | F |

* } See page 51.

COAL.
Analyses.

ANALYSES OF CANADIAN COALS—*Continued.*
CROW'S NEST PASS, B.C.

| Seam or Mine. | Fast or slow cooking. | Moisture. | Vol. Matter. | Fixed Carbon. | Ash. | Sulphur. | Spec. Gravity. | Theor. Evap. Power. | *Analyst. | +Reference. |
|--------------------------------------------------------------------------------------------------------------|--------------------------|-----------|--------------|---------------|-------|----------|----------------|------------------------|-----------|-------------|
| Marten creek—Peter seam, 14 ft. | S | p. c. | p. c. | 25·45 | 69·14 | 3·62 | .51 | 1·305 | 14·99 | B |
| " Jubilee seam, 30 ft. | S | p. c. | p. c. | 24·88 | 68·86 | 4·37 | .48 | 1·309 | 14·64 | B |
| " Four seams, 3, 4, 5 and 6 ft. | S | p. c. | p. c. | 44·41 | 43·63 | 9·86 | ..... | ..... | ..... | B |
| " Two-foot seam | F | p. c. | p. c. | 26·92 | 43·48 | 27·48 | ..... | ..... | ..... | B |
| " Middle seam, 2½ ft | F | p. c. | p. c. | 24·55 | 51·22 | 22·41 | ..... | ..... | ..... | B |
| " On Elk river seam, 15 feet | ..... | p. c. | p. c. | 21·76 | 68·20 | 10·04 | ..... | ..... | ..... | t |
| " Morrissey mine, No. 1—Highest seam worked; 18 ft. thick; dip, N. 21°; strike, E and W; suitable for steam. | 9 | p. c. | p. c. | 22·19 | 70·99 | 5·6 | ..... | .32 | 14·346 | u |
| " Morrissey mine.—No. 2 Seam, 18 ft.; dip and strike same as above; suitable for steam and household. | 82 | p. c. | p. c. | 11·73 | 71·5 | 15·75 | .2 | ..... | 12·858 | u |
| " Coal creek mine, No. 1—Seam, 8 ft.; dip, E. 15°; suitable for steam and household. | 84 | p. c. | p. c. | 22·38 | 73·17 | 3·15 | .46 | ..... | 14·935 | u |
| " No. 1—Seam, 9 ft.; dip, E. 15°; steam and household | 92 | p. c. | p. c. | 18·85 | 64·42 | 15·65 | .16 | ..... | 13·757 | u |
| " No. 2—Seam, 6 ft.; dip, E. 15°; suitable for steam and household | ..... | p. c. | p. c. | 84 | 22·38 | 73·17 | 3·15 | .46 | ..... | G |
| " No. 3—Same seam as above; samples taken one mile apart. | ..... | p. c. | p. c. | 92 | 20·63 | 72·05 | 6·0 | .4 | ..... | G |
| " No. 4—750 ft. below No. 1; seam, 22 ft.; dip, E.; 10° | ..... | p. c. | p. c. | 96 | 13·46 | 61·92 | 23·5 | .16 | ..... | G |
| Michel Mine, No. 3—Highest seam worked, 15 to 30 ft.; used for steam and coke. | 1·0 | p. c. | p. c. | 20·57 | 72·00 | 6·15 | .28 | ..... | 14·656 | u |
| " No. 4—80 feet below No. 3; 10 to 30 ft.; used for steam and coke. | 1·0 | p. c. | p. c. | 18·93 | 70·13 | 9·5 | .44 | ..... | 13·850 | u |

NICOLA VALLEY.

| | | | | | |
|--------------------------------------------|------|-------|-------|-------|--|
| Nicola river mouth of Coldwater river..... | 2·13 | 27·99 | 59·66 | 10·22 | |
| Coal gully, Iron mountain..... | 3·35 | 26·55 | 59·30 | 10·30 | |

NANAIMO FIELD, B.C.

| | 2·75 | 30·95 | 59·72 | 6·58 | |
|---------------------------------------|-------|-------|-------|-------|---|
| Wellington mines, Nanaimo | 38·40 | | 10·15 | | B |
| Upper seam, Nanaimo..... | 1·57 | 30·95 | 51·45 | 8·63 | B |
| Newcastle island, Nanaimo..... | 35·49 | | 58·03 | 0·82 | B |
| " Esplanade, No. 1 shaft, upper seam. | 1·88 | 33·27 | 52·57 | | B |
| " " lower seam | 2·86 | 35·84 | 54·67 | 78 | G |
| Harewood mine..... | 1·58 | 33·84 | 54·79 | 5·5 | G |
| " Harewood mine, No. 5..... | 2·08 | 35·78 | 52·17 | 11·85 | G |
| Southfield mine, No. 5..... | 1·28 | 35·26 | 56·26 | 5·6 | G |
| Extension seam, bottom vein..... | 1·24 | 36·49 | 55·83 | 7·30 | G |
| " top vein | 1·52 | 35·27 | 53·72 | 8·20 | G |
| Tunnel vein, bottom seam | 1·44 | 31·40 | 57·04 | 5·85 | G |
| " " | | | 46·18 | 20·65 | G |

COMOX FIELD, B.C.

| | | | | | |
|---------------------------------------|-------|-------|-------|-------|--|
| Union Colliery..... | 1·34 | 28·11 | 67·72 | 2·83 | |
| " Baynes sound mine | 1·70 | 27·17 | 68·27 | 2·86 | |
| " Trent river | 1·18 | 34·13 | 48·51 | 16·18 | |
| " | ·97 | 25·09 | 66·42 | 5·95 | |
| Beaufort mine, Comox..... | 29·30 | | 55·75 | 14·95 | |
| Union N.C. 5 Pit upper seam | 1·05 | 29·24 | 57·03 | 3·05 | |
| Hamilton lake..... | 1·70 | 22·82 | 47·72 | 27·00 | |
| No. 4 Slope Comox or lower seam | ·88 | 27·34 | 61·82 | 8·70 | |
| No. 5 Pit | 1·32 | 27·62 | 63·64 | 6·70 | |
| No. 6 Pit | 1·26 | 27·33 | 63·49 | 6·80 | |
| " " | | | 1·12 | | |

COAL.
Analyses.

COAL.
Analyses.

ANALYSES OF CANADIAN COALS—Concluded.
QUEEN CHARLOTTE ISLANDS, B.C.

| Seam or mine. | Fast or slow cooking. | Moisture. | Vol. Matter. | Fixed Carbon. | Ash. | Sulphur. | Spec. Gravity. | Theor. Evap. Power. | *Analyst. | +Reference. |
|-------------------------------------------------------------------------------------------|--------------------------|-----------|--------------|---------------|-------|----------|----------------|------------------------|-----------|-------------|
| Cowgitz (anthracite coal). | F | p. c. | p. c. | p. c. | p. c. | p. c. | p. c. | t | B | B |
| " Hooper creek, Skidegate Channel | F | 1·60 | 6·55 | 83·09 | 8·76 | ..... | ..... | t | B | B |
| " Camp Anthracite, Sec. 17, Tp. 5 | F | 1·99 | 7·65 | 80·62 | 9·74 | ..... | ..... | t | B | B |
| " " " " " | F | 1·52 | 8·69 | 80·07 | 9·72 | ..... | ..... | t | B | B |
| " " " " " | F | 2·85 | 7·59 | 68·25 | 21·31 | ..... | ..... | t | B | B |
| Camp Robertson, Sec. 20, Tp. 5, Graham island, 6½ miles west of Skidegate inlet | F | ·80 | 23·27 | 51·39 | 24·54 | ..... | ..... | t | B | B |
| Camp Wilson, Sec. 36 Tp. 9 | F | 1·06 | 43·48 | 46·01 | 9·45 | ..... | ..... | t | B | B |
| Yakoun river | S | 2·65 | 30·59 | 61·33 | 5·43 | ..... | ..... | t | B | B |
| YUKON TERRITORY. | | | | | | | | | | |
| Coal creek, or east branch of Rock creek, Klondike river | F | 18·31 | 34·96 | 40·88 | 5·85 | 46·73 | ..... | ..... | t | B |
| " " Cliff creek, tributary of Yukon | F | 19·37 | 33·85 | 37·45 | 9·33 | 46·78 | ..... | ..... | t | B |
| " " Lewes river, six miles above Rink rapid | F | 8·57 | 42·04 | 45·77 | 3·62 | 49·39 | ..... | ..... | t | B |
| Ten miles west of Drydale station on White Pass and Yukon Ry | F | 10·58 | 40·10 | 46·74 | 2·58 | 49·32 | ..... | ..... | t | B |
| White Horse Coal Co., in tunnel 63 feet | F | 6·42 | 36·98 | 46·03 | 10·57 | 56·60 | ..... | ..... | t | B |
| " " " top of mountain . . . . . | ..... | 2·31 | 5·59 | 67·20 | 24·90 | 92·10 | ..... | ..... | t | B |
|  | ..... | 1·76 | 5·69 | 68·59 | 23·96 | 32·52 | ..... | ..... | t | B |
|  | ..... | 3·83 | 15·84 | 47·81 | ..... | ..... | ..... | ..... | ..... | ..... |

BIBLIOGRAPHY.

Bibliography.

COAL IN CANADA.

Nova Scotia and New Brunswick.

- BAILEY, L. W.—The Mineral Resources of New Brunswick. Geol. Surv. of Can., 1897, Part M.
- BAILEY, L. W. & POOLE, H. S.—Reports upon the Carboniferous system of New Brunswick. Geol. Surv. of Canada.
- BARLOW, S.—Report of Progress in Surveys in coalfields of Cumberland county, Geol. Surv. 1875-76.
- BARLOW, S.—Report on Springhill coalfields. Report of Progress of Geol. Surv. 1873-74.
- BELL, B. T. A.—Canadian Mining Manual, Ottawa, 1903.
- BROWN, RICHARD.—Coal fields and coal trade of the Island of Cape Breton. Reprint by Maritime Mining Record office, Stellarton, N.S. 1899.
- ELLS, R. W.—On geological formations of Eastern Albert and Westmoreland counties, N.S., and of portions of Cumberland and Colchester counties, N.S. Rep. Geol. Surv. 1885 Part E.
- FLETCHER, HUGH.—Report on the geology of part of the counties of Victoria, Cape Breton and Richmond, Nova Scotia. Report of Progress Geol. Surv 1876-77.
- FLETCHER, HUGH.—Report on the geology of portions of the counties of Victoria, Cape Breton and Richmond, Nova Scotia. Report of Progress Geol. Surv. 1876-77.
- FLETCHER, HUGH.—Descriptive notes on the Sydney coal fields, Geological Survey, 1900.
- GILPIN, EDWIN.—Minerals of Nova Scotia, Halifax, 1901.
- GILPIN, E. G.—Annual Reports of the Department of Mines, Nova Scotia, Halifax, N.S.
- HARTLEY, E.—Notes on coal from Springhill coal field. Report of Progress, Geol. Surv., 1866-69.
- HARTLEY, E.—Coals and iron ores of Nova Scotia. Geological Survey, 1870.
- HARTLEY, E.—Report on Pictou coal and iron ores. Report of Progress, 1866-69.
- LOGAN, SIR W. E.—Report on part of Pictou coal fields. Report of Progress, Geol. Surv., 1866-69.
- McOUAT, W.—Report on a portion of the coal fields of Cumberland county. Report of Progress, Geol. Surv. 1873-74.
- ROBB, CHAS.—Report on explorations and surveys in Cape Breton, Nova Scotia. Report of Progress, Geol. Surv., 1873-74.

COAL.

Bibliography.

- ROBB, CHAS.—Report on the coal mines of Cape Breton county, Nova Scotia. Report of Progress, Geol. Surv., 1872-73.
- ROBB, CHAS. Supplemental Report on coal mines of Cape Breton county. Report of Progress, Geological Survey, 1873-74.
- RUTHERFORD, JOHN.—The coal-fields of Nova Scotia. Trans. North of England Inst. of Mining Engineers, Vol. 19, 1869-70.

British Columbia, Manitoba and North-West Territories.

- BELL, R.—Report on part of Basin of Athabasca river, N. W. T. Geol. Surv. of Can., Rep. of Prog., 1882-84.
- BROCK, R. W.—Coal bearing rocks of Kettle Valley, B.C. Summary Report, Geol. Surv., 1900.
- DAWSON, G. M.—Report on the Tertiary lignite formation in the vicinity of the 49th parallel. British North America Boundary Commission, 1873.
- DAWSON, G. M.—Report on climate, agricultural value, general geological features and minerals of economic importance of part of northern portion of British Columbia and Peace river country. Reprint from report of Canadian Pacific Railway, 1880. Published by Geological Survey.
- DAWSON, G. M.—Preliminary note on the geology of the Bow and Belly rivers district, N.W.T., with special reference to the coal deposits. Report of Progress of Geol. Surv., 1880-81-82, Part B.
- DAWSON, G. M.—Mineral wealth of British Columbia with annotated list of localities of minerals of economic value. Rep. Geol. Surv., 1887-88, Part R.
- DAWSON, G. M.—Report on a geological examination of the northern part of Vancouver Island and adjacent coast. Report Geol. Surv., 1886, Part B.
- DAWSON, G. M.—Note on coal-bearing rocks of Queen Charlotte Islands, B.C. Report of Progress, Geol. Surv., 1876-77.
- DAWSON, G. M.—Preliminary report on physical and geological features of that portion of the Rocky mountains between latitudes 49° and 51° 30'. Report Geol. Surv., 1885, Part B.
- DAWSON, G. M.—Note on coal measures of the Nanaimo coal-field. Report of Progress, Geol. Surv., 1876-77.
- DAWSON, G. M.—Report on Peace river valley. Report of Progress, Geol. Surv., 1879-80.
- DAWSON, G. M.—Geology of lignite formation at Quesnel. Report of Progress, Geol. Surv., 1875-76.
- DAWSON, G. M.—Notes on coal rocks of Nicola valley. Report of Progress, Geol. Surv., 1876-77.
- DAWSON, G. M.—Preliminary Report on geology and coal deposits of Bow and Belly rivers region. Report of Progress, Geol. Surv., 1880-82.
- DAWSON, G. M.—General note on the mines and minerals of economic value of British Columbia. Report of Progress, Geol. Surv., 1876-77.
- DAWSON, G. M.—Coal and lignite in Kamloops district. Report Geol. Survey, 1894, Vol. VII, Part B.
- DOWLING, D. B.—Index to reports of Geol. Surv., 1863-84.

- DOWLING, D. B.—Souris coal-field. Summary Report, Geoglogical Survey, 1902. COAL.
- HARRINGTON, B. J.—On the coals of the west coast. Report of Progress, Geol. Surv., Bibliography. 1872-73.
- LEACH, W. W.—Crows Nest Pass. Summary Report, Geol. Surv., 1901.
- McCONNELL, R. G.—Report on the Cypress hills, Wood mountain. Report Geol. Surv., 1885, Part C.
- McCONNELL, R. G.—Yukon district. Summary Report, Geol. Surv., 1899.
- McCONNELL, R. G.—Yukon district, lignite areas. Summary Report, Geol. Surv., 1900.
- McEVOY, JAMES.—Crows Nest Pass. Summary Report, Geol. Surv., 1900.
- McEVOY, JAMES.—Report on the geology and natural resources of the country traversed by the Yellowhead pass route from Edmonton to Tête Jaune Cache. Geol. Surv. Report, Vol. XI., Part D.
- RICHARDSON, JAS.—Report on Nanaimo coal-fields, Vancouver island, B.C. Report of Progress, Geol. Surv., 1876-77.
- RICHARDSON, JAS.—Report on part of Nanaimo coal-field. Report of Progress, Geol. Surv., 1871-72.
- RICHARDSON, JAS.—Report on part of Comox coal-fields, Vancouver island. Report of Progress, Geol. Surv., 1871-72.
- RICHARDSON, JAS.—Report on Cowitchen coal area, Vancouver Island, B.C. Report of Progress, Geol. Surv., 1876-77.
- RICHARDSON, JAS.—Report on coal-fields of Skidegate, Queen Charlotte island, B.C. Report of Progress, Geol. Surv., 1872-73.
- RICHARDSON, JAS.—Report on Comox coal-field, Vancouver island, B.C. Report of Progress, Geol. Surv., 1876-77.
- ROBERTSON, W. F.—Annual Reports of the Minister of Mines for the Province of British Columbia. Victoria, B.C.
- SELWYN, A. R. C.—Reports on borings north of Turtle mountain and on Souris river, Manitoba. Report of Progress, Geol. Surv., 1879-80.
- TYRRELL, J. B.—Report on a part of Northern Alberta. Report of Geol. Surv., 1886, Part E.

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Maps.

MAPS OF THE GEOLOGICAL SURVEY COVERING COAL DISTRICTS.

| No. on List of Publica- tions. | <i>Nova Scotia and New Brunswick.</i> |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 105. | Cape Dauphin district. |
| 106. | Eastern part of Sydney coal field. |
| 113. | Western part of Sydney coal field. |
| 184. | Sheet 1 (Cape North Sheet), parts of Inverness and Victoria counties. Scale 1 mile to 1 inch. |
| 185. | Sheet 2 (Aspy Bay Sheet), part of Victoria County. Scale 1 mile to 1 inch. |
| 186. | Sheet 3 (Pleasant Bay Sheet), parts of Inverness and Victoria counties. Scale 1 mile to 1 inch. |
| 187. | Sheet 4 (Ingonish Sheet), part of Victoria County. Scale 1 mile to 1 inch |
| 188. | Sheet 5 (Head-waters of Cheticamp River Sheet), parts of Inverness and Victoria Counties. Scale 1 mile to 1 inch. |
| 189. | Sheet 6 (North Cheticamp Sheet), part of Inverness County. Scale 1 mile to 1 inch. |
| 190. | Sheet 7 (North Shore Sheet), part of Victoria County. Scale 1 mile to 1 inch. |
| 191. | Sheet 8 (Head-waters Margaree River Sheet), parts of Inverness and Victoria Counties. Scale 1 mile to 1 inch. |
| 192. | Sheet 9 South Cheticamp Sheet), part of Inverness County. Scale 1 mile to 1 inch. |
| 193. | Sheet 10 (Englishtown Sheet), parts of Victoria and Inverness Counties. Scale 1 mile to 1 inch. |
| 194. | Sheet 11 (Margaree Sheet), parts of Inverness and Victoria Counties. Scale 1 mile to 1 inch. |
| 195. | Sheet 12 (Baddeck Sheet), part of Victoria County. Scale 1 mile to 1 inch. |
| 196. | Sheet 13 (Middle River Sheet), parts Inverness and Victoria Counties. Scale 1 mile to 1 inch. |
| 197. | Sheet 14 (Broad Cove Sheet), part of Inverness County. Scale 1 mile to 1 inch. |
| 198. | Sheet 15 (Whycocomagh Sheet), parts of Inverness and Victoria Counties. Scale 1 mile to 1 inch. |
| 199. | Sheet 16 (Port Hood Sheet), part of Inverness County. Scale 1 mile to 1 inch. |
| 200. | Sheet 17 (Loch Lomond Sheet), parts of Richmond and Cape Breton Counties. Scale 1 mile to 1 inch. |
| 201. | Sheet 18 (River Denys Sheet), parts of Richmond and Inverness Counties. Scale 1 mile to 1 inch. |
| 202. | Sheet 19 (Judique Sheet), part of Inverness County. Scale 1 mile to 1 inch. |
| 203. | Sheet 20 (L'Ardoise Sheet), part of Richmond County. Scale 1 mile to 1 inch. |

204. Sheet 21 (Saint Peter Sheet), parts of Richmond and Inverness Counties. COAL.
Scale 1 mile to 1 inch.
205. Sheet 22 (Strait of Canso Sheet), parts of Inverness, Richmond, Antigonish
and Guysborough Counties. Scale 1 mile to 1 inch. Maps.
206. Sheet 23 (Arichat Sheet), part of Richmond County. Scale 1 mile to 1 inch.
652. Cape Dauphin Sheet, part of Cape Breton and Victoria counties.
653. Sydney Sheet, parts of Cape Breton and Victoria counties.
654. Little Glace Bay Sheet, part of Cape Breton county.
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145. Grand Lake Sheet, N.B.
162. Newcastle Sheet, N.B.
675. Map of principal mineral occurrences in New Brunswick.
812. Preliminary map of Springhill coal field.

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224. Cascade coal basin.
223. Reconnaissance map of a portion of the Rocky mountains.
804. Orographic map of lower contour of Turtle mountain, Manitoba.
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87. Coal fields of Nanaimo and Comox.
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- 139, 140, 141. Queen Charlotte islands.
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